LIPPINCOTT'S
QUICK REFERENCE BOOK
FOR
MEDICINE AND SURGERY

ANATOMY OF THE HUMAN BODY

M H BERTLING M.D

ANATOMY OF THE HUMAN BODY

Plates A & C. – THE BONES.

No 1	Vertebræ of the neck or cervical (7)	The Trunk
2	Dorsal or thoracic vertebræ (12)	
3	Lumbar vertebræ (5)	
4	Sacral vertebræ or Sacrum	
5	Coccygeal vertebræ or Coccyx	
6	Clavicles (2)	
7	Scapulæ (2)	
8	Ribs (12)	
9	Sternum	
10	Pelvis, made up of the following parts:	
11	Ilium	
12	Pubis	
13	Ischium	
14	Humerus	Arm
15	Ulna	Fore-Arm
16	Olecranon	
17	Radius	
18	Carpus : Scaphoid	Wrist
19	» Semilunar	
20	» Pyramidal or cuneiform	
21	» Pisiform	
22	» Unciform	
23	» Os magnum	
24	» Trapezoid	
25	» Trapezium	
26	Metacarpals (5)	Hand
27	First phalanges (5)	
28	Second » (4)	
29	Third » (5)	
30	Femur	Thigh
31	» great trochanter	
32	» small trochanter	

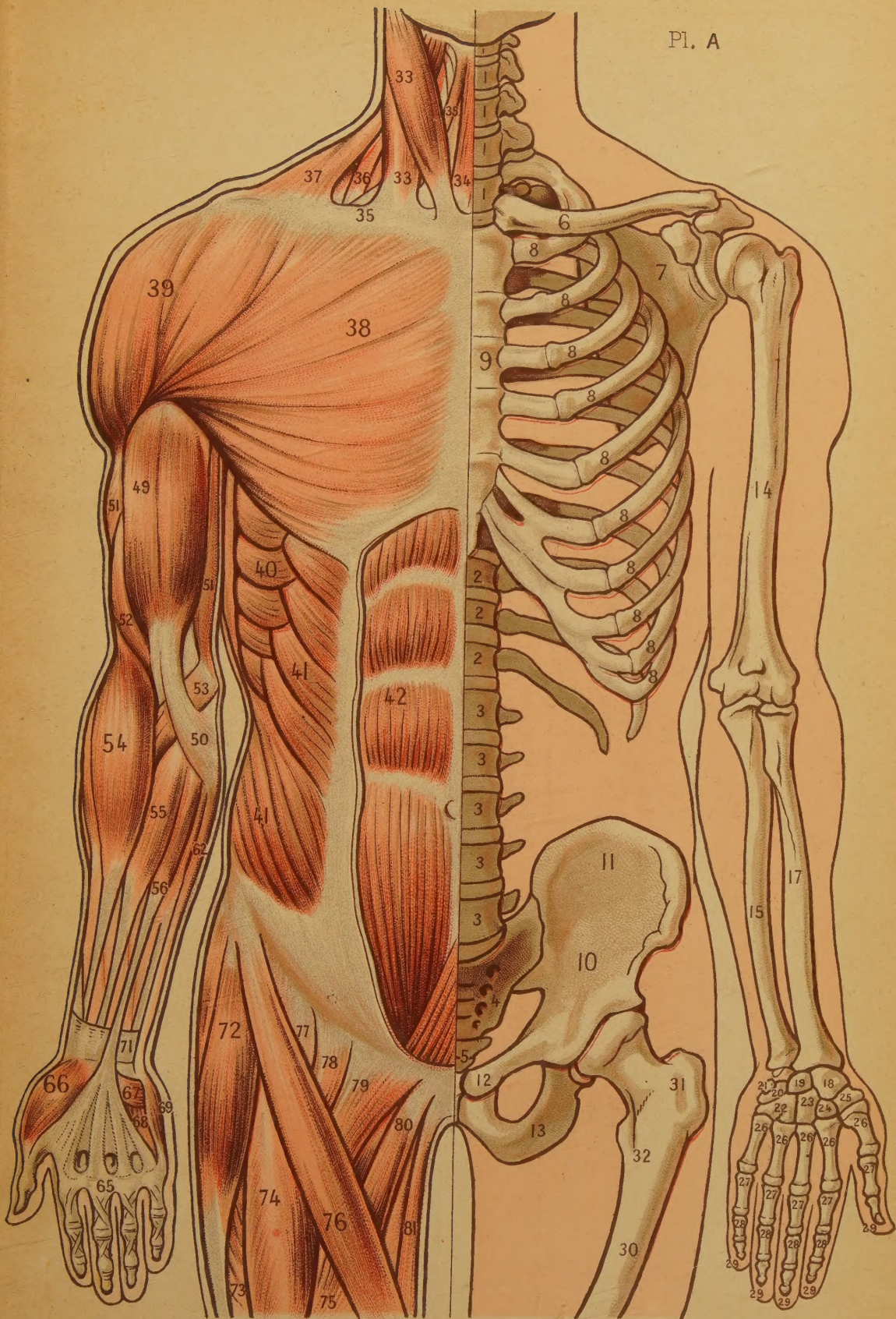
Plates A, B & C. – THE MUSCLES.

33	Sterno-cleido-mastoid	A	Neck
34	Sterno-hyoid	A	
35	Omo-hyoid	A	
36	Scalenus anticus	A	
37	Trapezius	A C	Neck, Shoulder
38	Pectoralis major	A	Shoulder Chest
39	Deltoid	A C	
40	Serratus magnus	A	Abdomen
41	External oblique	A	
42	Rectus abdominis	A	

THE MUSCLES

(Continued)

43	Infraspinatus	C	Back
44	Teres minor	C	
45	Teres major	C	
46	Rhomboideus major	C	
47	Latissimus dorsi	C	
48	Sacro-spinalis	C	
49	Biceps	A	Arm
50	Tendon of biceps	A	
51	Triceps	A	
52	Brachialis anticus	A	
53	Pronator radii teres	A	Fore-Arm
54	Supinator longus	A	
55	Flexor sublimis digitorum	A	
56	Palmaris longus	A	
57	Extensor carpi radialis longior	C	
58	» » » brevior	C	
59	» communis digitorum	C	
60	» minimi digiti	C	
61	» carpi ulnaris	C	
62	Flexor carpi ulnaris	A C	
63	Extensor brevis pollicis	C	
64	» longus pollicis	C	
65	Palmar fascia-aponeurotic expansion of palmaris brevis		Wrist and Hand
66	Abductor pollicis		
67	Palmaris brevis		
68	Flexor brevis minimi digiti		
69	Abductor minimi digiti		
70	Dorsal interossei		
71	Annular ligament		
72	Tensor of the fascia lata	A	Lower Abdomen and Chest
73	Vastus externus	A	
74	Rectus femoris	A	
75	Vastus internus	A	
76	Sartorius	A	
77	Iliacus	A B	
78	Psoas	A B	
79	Pectineus	A B	
80	Adductor longus	A B	
81	Gracilis	A B	
82	Gluteus maximus	C	
83	Biceps	C	
84	Semitendinosis	C	
85	Semimembranosis	C	
86	Diaphragm	B	
87	Quadratus lumborum	B	
88	Intercostals	B	



MAURICE DESSERTENNE . del.

Plate B – RESPIRATORY and VOCAL APPARATUS.

N° 89	Thyroid muscles	Neck
90	Larynx	
91	Thyroid gland	
92	Trachea	
93	Bronchi and bronchioles	Thorax
94	Lung	

Plate B – HEART, CIRCULATION, KIDNEYS, URETER, Suprarenal glands.

95	Heart and coronary arteries	Thorax and Abdomen
96	Auricle	
97	Pulmonary artery and its branches	
98	Aorta	
99	Superior vena cava	
100	External jugular vein	
101	Internal » »	
102	Innominate artery	
103	Subclavian »	
104	Common carotid artery	
105	Pulmonary veins	
106	Inferior vena cava	
107	Pericardium	
108	Thoracic duct	
109	Coeliac axis	
110	Superior mesenteric artery	
111	Renal artery	
112	Spermatic artery	
113	Inferior mesenteric artery	
114	Common iliac artery	
115	Internal iliac artery	
116	External iliac artery	
117	Kidneys	
118	Suprarenal glands	
119	Ureters	
120	Renal veins	
121	Hepatic veins	

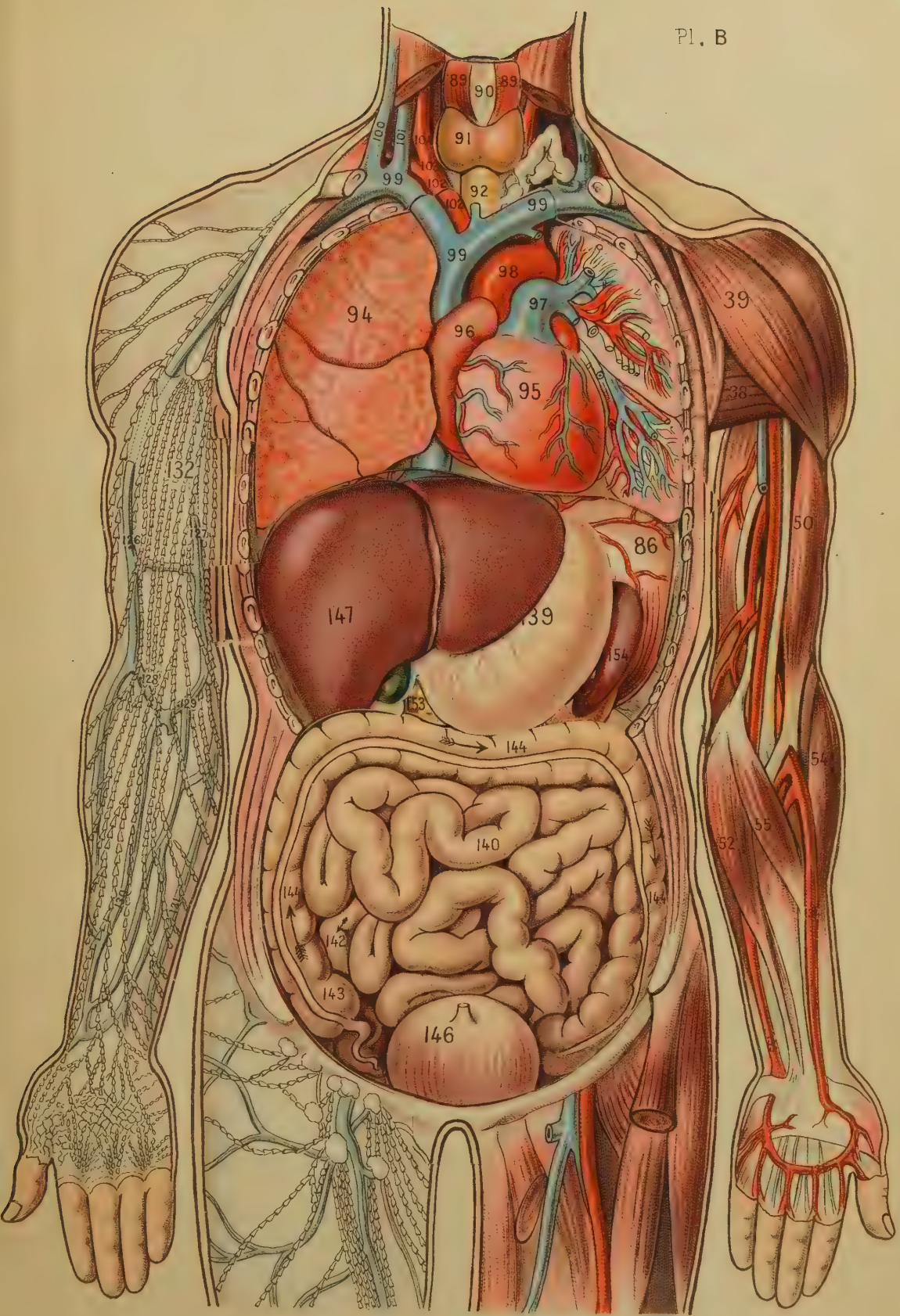
HEART, CIRCULATION, KIDNEYS, URETER. *(Continued)*

N°122	Mesenteric veins	
123	Common iliac veins	
124	Internal iliac veins	
125	External iliac veins	
126	Cephalic vein	Arm Fore-Arm Hand
127	Basilic vein	
128	Median cephalic vein	
129	Median basilic vein	
130	Ulnar vein	
131	Radial vein	
132	Lymphatics	
133	Brachial artery	
134	Radial artery	
135	Ulnar artery	
136	Palmar arch	

Plate B – DIGESTIVE APPARATUS, SPLEEN & BLADDER.

137	Pharynx	
138	Oesophagus	
139	Stomach	
140	Small intestines	: duodenum
141	» »	: jejunum
142	» »	: ileum
143	Large »	: cecum and appendix
144	» »	: ascending, transverse and descending colon
145	» »	: rectum
146	Bladder	
147	Liver	
148	Gall bladder	
149	Cystic duct	
150	Hepatic duct	
151	Portal duct	
152	Hepatic artery	
153	Pancreas	
154	Spleen	

Pl. B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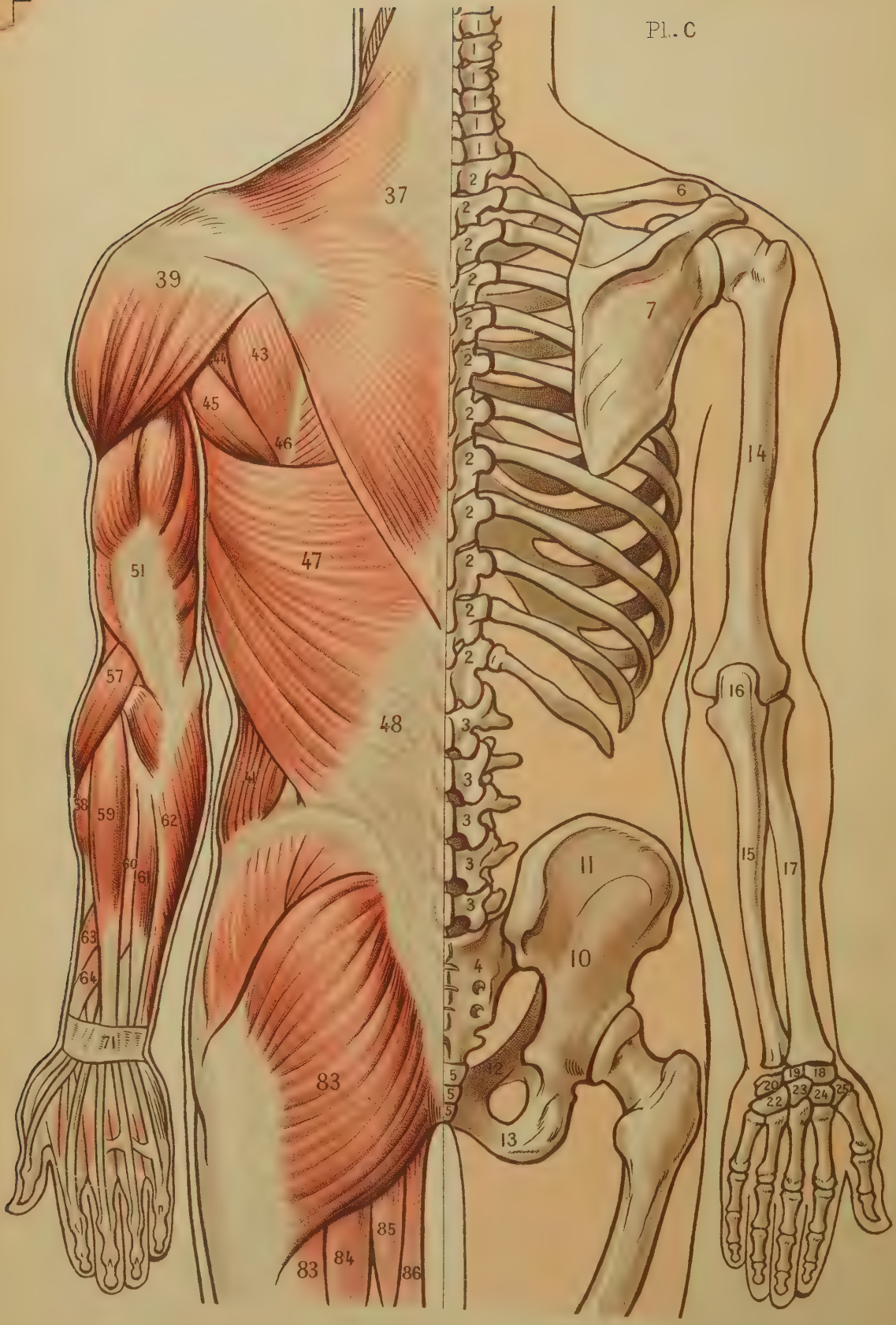
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FOR
MEDICINE AND SURGERY

A CLINICAL, DIAGNOSTIC AND THERAPEUTIC DIGEST OF GENERAL MEDICINE, SURGERY AND THE SPECIALTIES, CULLED EXTENSIVELY AND INTENSIVELY FROM MODERN LITERATURE, AND SYSTEMATIZED

BY
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PREFACE

This book consists of eleven parts, dealing respectively with (1) General Medicine and Surgery, including Neurology and the Diseases of Infancy and Childhood; (2) Gynecology; (3) Genito-Urinary Diseases; (4) Obstetrics; (5) Skin Diseases; (6) Diseases of the Eye; (7) Diseases of the Ear; (8) Diseases of the Nose; (9) Diseases of the Throat; (10) Orthopædics, including Fractures and Dislocations; and (11) Drugs,—the whole field, indeed, of practical medicine, excepting psychiatry.

Each disease or disorder is treated alphabetically. First is given a distinguishing, or diagnostic, definition, or description, of the affection, with pictures wherever these are useful. Diagnostic laboratory tests are supplied where required. Next comes a full enumeration of the causes of the disease; then its prognosis, or its expected duration and final outcome. Finally treatment is given as concisely, explicitly and completely as possible (except, as a rule, for operative technic) so as to obviate the necessity of referring to other works for elucidations, technic, dosage of drugs, formulæ, etc. In addition quarantine and prophylactic measures are considered where indicated.

Part Eleven contains an alphabetical list of all the drugs mentioned in the body of the work, with the nature, or constitution, of each drug; its solubility; the dosage at different ages; mode of administration; pharmacological action, and toxic effects.

To complete each part an appendix is given containing a scheme for the history and examination of the patient, the equipment, or armamentarium, required in the specialty with which the part deals, and a list of the drugs mentioned in the text.

Each affection in the text has been carefully gone over, and all instruments and drugs, required for its proper treatment, have been catalogued, as an adequate equipment is, of course, a prime requisite to efficiency and self-confidence.

I have undertaken this work because it has not been done before, and because I believe it will fill a very great need. I have aimed to accomplish a critical sifting of the important modern literature, a selection of all that is useful and needful in bedside therapeutics, and a rearrangement of this mass of knowledge for purposes of quick reference and individual completeness of treatment of each subject, making it immediately available for practical needs.

I claim nothing as my own in this work except the plan, or system, the selective judgment employed and the great labor involved. It is a compilation, culled from modern medical teaching, and colored by the varied experience of one who has been an isolated country doctor, and feels that he knows the needs of the general practitioner who is confronted with disease in all its manifestations, and should be of broad and thorough education.

When consulting any single authority, one is often disappointed by the lack of certain important information, which may, on further search, be found in another work. The physician would like to consult many authorities, but has not the means, or the time, at his disposal. I have endeavored to do for him here, what he would like to do for himself had he the facilities.

In writing up each disease I have kept constantly in mind the needs of the practitioner, the necessities of whose situation demand that he should be well equipped to meet all emergencies, and that he should be self-reliant and a master of detail. I have put myself in his place when he is actually confronted with a patient having the disease, disorder, or symptom under consideration. A careful history and examination completed, and a diagnosis arrived at, what should be done to cure, or to relieve, the patient, and if the disease is contagious or infectious, what should be done for the safety of society?

First of all what is the cause of the ill health? To assist the physician in this inquiry there are enumerated all the possible causes which I could assemble from many sources of information. The cause removed, if possible, be it an operable lesion, or an injurious habit, or bad hygiene, etc., the attention is directed to restoring normal conditions of health (*i.e.*, normal functioning of the various organs); and here I aim to consider each measure of treatment in the order in which it must, ordinarily, be employed, and to describe the technic of its performance, always endeavoring to be explicit, thorough and rational, and sedulously to avoid vagueness, incompleteness, and, if possible, empiricism.

I have devoted serious and painstaking care to make this work as thorough and reliable as my finite capacity for labor would permit. In presenting it to my fellow-practitioners, I trust that it will be as useful to them as it is to me.

George E. Rehberger, A.B., M.D.

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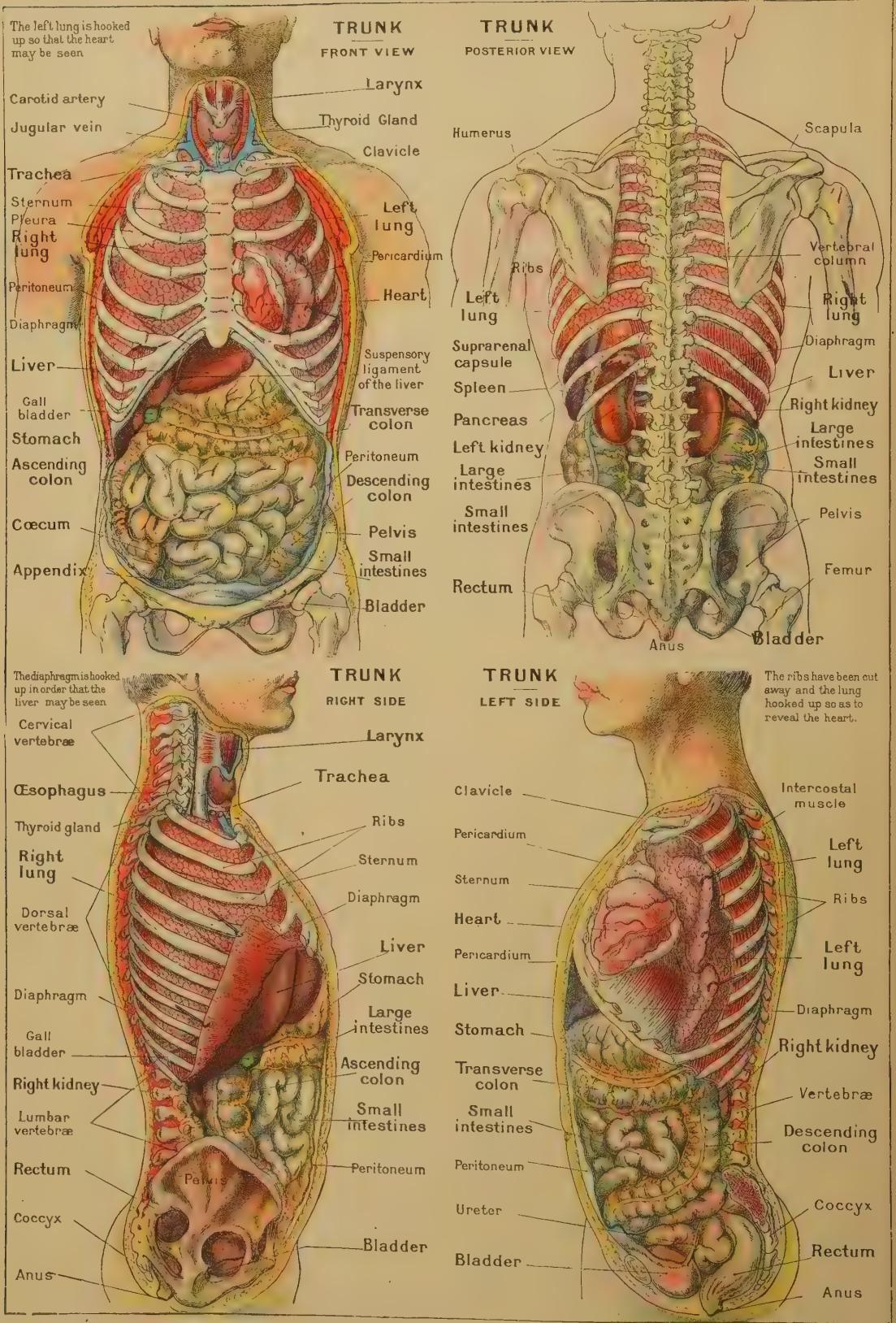

LAROUSSE MÉDICAL

Viscera of the Abdomen and Thorax

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PART I

GENERAL MEDICINE AND SURGERY, INCLUDING NERVOUS AND CHILDREN'S DISEASES.

Abasia.—See Astasia-Abasia.

Abdominal Pain.—See Pain.

Abducens Nerve.—See Motor Nerves of the Eyeball.

Abscess.—L. *absces'sus*, a going apart.—See Infection, Local.

Alveolar.—See Alveolar Abscess.

Amœbic, of the Liver.—See Liver Abscess.

Brain.—See Brain Abscess.

Brodie's.—See Osteomyelitis.

Hand.—See Hand Infections.

Hepatic.—See Liver Abscess.

Ischiorectal.—See Ischiorectal Abscess.

Kidney.—See Pyelonephritis.

Liver.—See Liver Abscess.

Lung.—See Pulmonary Abscess.

Mediastinal.—See Mediastinitis.

Muscle.—See Myositis.

Nephritic.—See Pyelonephritis.

Palmar.—See Hand Infections.

Perinephric.—See Perinephric Abscess.

Peritonsillar.—See Peritonsillar Abscess, in Throat Diseases, Part 9.

Renal.—See Pyelonephritis.

Retro-œsophageal.—See Retro-œsophageal Abscess.

Retro-peritoneal.—See Retro-peritoneal Abscess.

Retro-pharyngeal.—See Retro-pharyngeal Abscess.

Splenic.—See Splenic Abscess.

Subdiaphragmatic.—See Subdiaphragmatic Abscess.

Subphrenic.—See Subdiaphragmatic Abscess.

Tropical.—See Liver Abscess.

Achlorhydria.—See Anacidity.

Acholic Stools.—Gr. *a* priv. + *χολή* bile. See Colorless Stools.

Acholuric Jaundice.—Gr. *a* priv. + *χολή* bile + *οὖρον* urine. See Jaundice and Splenomegaly.

Achondroplasia.—Gr. *a* priv. + *χόνδρος* cartilage + *πλάσσειν* to form. Synonyms: Congenital or Fœtal Rickets; Chondrodystrophia Fœtalis, *δυς* ill + *τρεφειν* to nourish; Micromelia, *μικρός* small + *μέλος* limb.

A rare fœtal and infantile disease of unknown etiology, in which there is arrest of growth and premature union of the epiphysial cartilages of the long bones. The diagnostic features are: shortness of the extremities, but normal growth of the head and trunk, which appear disproportionately large; fingers and toes respectively of about equal length; nose retracted. The few that survive this affection are dwarfs.

Treatment.—Employ (of course only in the formative stage in infants) careful feeding (see Infant Feeding), daily massage and manipulation of the distorted parts and ankylosed joints, and electricity (see Poliomyelitis, Acute).

Pituitary extract (q. v. in Part 11) may, perhaps, be tried experimentally. Thyroid extract is without effect.

Achylia Gastrica.—See Anacidity.

Acid Eructations.—See Hyperacidity.

Acidity of the Stomach.—See Hyperacidity.

Acidosis; Hypo-alkalinity of the Blood.—Acidosis denotes a diminution in the alkali reserve (chiefly sod. carbonate and phosphate) of the blood plasma, due, ordinarily, to the occurrence in the blood of β-oxybutyric or of diacetic acid, the latter being a decomposition product of the former. Beta-oxybutyric acid arises from the incomplete oxidation of

fats and the amino-fatty acids of the protein molecule. Diacetic acid further decomposes into acetone and carbon dioxide. Thus, in a comparatively mild type of diabetes, acetone alone may be found in the urine; in a severer type, diacetic acid; and in the severest cases β-oxybutyric acid and no acetone. (For tests, see Urinalysis. See also Metabolism.)

The degree of acidosis may be conveniently ascertained by a determination of the carbon-dioxide tension in the alveolar air (which is approximately the same as that in the venous blood) according to the method of W. McKim Marriott. The technique of the test is as follows: Close the neck of a hot water bag (of about 1500 c.c. capacity) with a perforated rubber stopper containing a short glass tube three-eighths of an inch in internal diameter. To this tube connect a short rubber tube with a glass mouthpiece, one and a half inches long and three-eighths of an inch in internal diameter. Blow into the bag, by means of an atomizer bulb, about 600 c.c. of air, and clamp the rubber tube with a pinch-cock.

Instruct the patient to rest quietly and breathe naturally, and at the end of a normal expiration place the tube in his mouth, release the pinch-cock, close the patient's nose, and have him breathe back and forth from the bag four (or more) times in twenty seconds, emptying the bag at each inspiration. Then close the stop-cock at the end of an expiration and analyze the air within the bag within three minutes, as carbon dioxide rapidly escapes through rubber.

The apparatus required for the analysis consists of eight standardized phosphate solutions, colored with phenolsulphonephthalein, sealed in tubes, and numbered 10, 15, 20, 25, 30, 35, 40, and 45 mm. respectively; a standard bicarbonate indicator solution; a glass pipette drawn out to a capillary point; test-tubes; paraffined stoppers; and a box for color comparison; the whole outfit obtainable from Hynson, Westcott and Dunning, Baltimore, Maryland. Pour about 2 or 3 c.c. of the standard bicarbonate solution into a clean test-tube of the same diameter as the standard phosphate tubes. Blow into this, through the capillary pipette, air from the bag until no further color change occurs, showing that the solution is saturated. Stopper the tube, and compare its color at once with that in the standard tubes, placing it between the two standards which it most nearly matches. The room temperature should be from 20° to 25° C. (68° to 77° F.); if it is above or below this, the specimen should be immersed in water of about 25° C. while being saturated with the gas being examined. Make several determinations.

In acidosis the carbon-dioxide tension in the alveolar air is diminished, owing to increased ventilation of the lungs, due to stimulation of the respiratory centre. The normal tension is about 40 mm.; a tension below 35 mm. means acidosis; 20 mm. indicates danger.

Another, but not conclusive, means of measuring the degree of acidosis is by the estimation of the ammonia output in the urine (see Urinalysis). The ammonia-excreting function of the kidneys, may, however, become impaired.

For the Fredericia method of ascertaining the carbon-dioxide tension of the alveolar air, and the Van Slyke method for the carbon-dioxide capacity of the blood plasma, obtain instruments with instructions from the Emil Greiner Co., 55 Fulton Street, New York.

The symptoms of acid intoxication are dyspnœa (deep breathing of the "air-hunger" type, or acyanotic hyperpnœa, due to increase of CO_2 in the blood), indigestion, burning pain in the pharynx or epigastrium, nausea, vomiting, lassitude, various nervous manifestations, headache, increasing drowsiness, and finally coma. [Dyspnœa is also caused by the excessive formation of lactic acid in the contracting muscles in excessive muscular exertion, due to the incomplete oxidation of carbohydrates.]

The causes of acidosis are: diabetes mellitus; starvation from any cause, as rectal feeding, œsophageal stenosis, etc.; non-carbohydrate diet; incomplete oxygenation of the blood, as in pneumonia, tuberculous pneumothorax, mountain sickness, CO poisoning, dyspnœa from any cause; certain toxic conditions of the liver, as in cyclic vomiting of children, pernicious vomiting of pregnancy, hepatic cancer, acute yellow atrophy, portal cirrhosis, eclampsia, and phosphorus and chloroform poisonings; salicylate poisoning; cyanide poisoning; thyrotoxicosis; uræmia; severe sepsis; severe diarrhœas of children; severe burns.

Treatment.—Attend to the cause. Open the bowels freely. Give alkalies freely until the urine is alkaline, and the alveolar carbon-dioxide tension has risen above 30 mm., or the ammonia output is below, at the most, 3 grams. A fair index of the degree of acidosis is seen in the amount of sodium bicarbonate required to render the urine alkaline to litmus; normally 4 to 5 grams suffices. (Sellards.) If the urine is origin-

ally ammoniacal as a result of fermentation, it should be boiled until all the ammonia is driven off, the original volume restored by the addition of water, and the urine then tested with litmus for fixed alkali.

℞ Sodii bicarbonatis..... ʒi
Potassii citratis..... gr. xxx
Calcii lactatis..... gr. iii
Magnesii carbonatis..... gr. iii
Aquam, ad ..... ʒi

M. Sig.—ʒi t.i.d.; or in severe cases every three hours, sufficient to render the urine alkaline, etc. (W. Langdon Brown.)

The above mixture is "based upon the relative proportions of the metals normally present in the urine." Says Brown: "It is not sufficient to give sodium alone, for other metallic bases are also being drained from the tissues, particularly calcium"; and, too, "If one metallic salt is given out of proportion to the others, it increases the excretion of those others." Joslin avoids the use of alkalies.

Administer also dextrose or levulose, 5–10–25 per cent. in aqueous solution per mouth or rectum, or intravenously. Use pure dextrose, since the commercial glucose may contain large amounts of arsenic. Joslin recommends at least 1 gm. of carbohydrate per kilogram (2⅕ lbs.) of body weight per 24 hours. It may be given intravenously up to 20–25 per cent. strength, introduced by the gravity method, the same as salvarsan (see Intravenous Medication). Enough alkali should be added to render the solution alkaline to litmus (to neutralize sulphuric acid used in the manufacture of dextrose). Sterilize by boiling. Give it slowly so as not to overload the right heart. It is quite safe to give 250 c.c. (one-half pint) every three hours to an adult. One should use judgment in giving more than this amount at one time, or in giving it oftener than every three hours. The carbohydrate is administered for the purpose of engaging oxygen, and thereby preventing the exposure of the fats to oxidation or partial oxidation, with the formation of β-oxybutyric acid. Alcohol or citric acid (see Part 11) may be used as a substitute for carbohydrate. Withdraw fats from the diet.

In the presence of threatening or actual coma, slowly inject intravenously (*q. v.*), at the body temperature, after withdrawing 200–400 c.c. of blood, 500 c.c. of 4 per cent. sodium bicarbonate solution in normal salt solution, previously sterilized by boiling. Take great care that none of the liquid gets outside the vein lest necrosis occur. Repeat the injection in a different vein every four to six hours, if necessary, according to the alveolar air findings or the symptoms. When the urine has become alkaline, and is kept so the danger is past. If the bicarbonate solution is administered subcutaneously or intramuscularly, it must first be saturated with carbon dioxide passed into the cold sterile solution from a cylinder, the point of saturation being indicated by a change in color of a small amount of added phenolphthalein from pink to colorless. This is essential in order to reconvert carbonate (formed from the bicarbonate in boiling) into bicarbonate, the former being very caustic. For subcutaneous injection use no stronger a solution of bicarbonate than 3 per cent.

The following technic for obtaining a solution of sodium bicarbonate free from the caustic carbonate may be employed. Boil one litre of sterile distilled water, remove it from the flame, and add at once 30 grams of sodium bicarbonate (C. P.), taken directly from the original container and weighed in a sterile vessel. Cool to 110° F., and use at once.

Oxygen inhalations (see under Pneumonia) are recommended.

It is well to know that massage and baths increase the alkalinity of the blood.

Acoria.—Gr. α priv. + κόρος satiety. Acoria is absence of the sensation of satiety. Consult Bulimia.

Acoustic Nerve Affections.—See Auditory Nerve Affections in Ear Diseases, Part 7.

Acromegaly.—Gr. ἄκρος extremity + μεγάλη great. A rare, chronic disease, due to an affection of the pituitary gland or hypophysis cerebri (hyperplasia, adenoma, fibroma, sarcoma, neighboring or distant disease, the latter acting by compression, *e.g.* tumors or hydrocephalus), and characterized by enlargement of the bones and soft parts of the face, hands, and feet and other parts, kyphosis, and perhaps glycosuria (hyperpituitarism); and, later, adiposity, mental torpidity, somnolence, slow pulse, subnormal temperature, dry skin, loss of hair, amenorrhœa in women, impotence in men, high sugar tolerance and polyuria (hypopituitarism); also, in a progressively enlarging lesion, headache and other pains, visual disturbances (bitemporal hemianopsia: optic atrophy), giddiness, paræsthesia of the extremities, epistaxis, etc., due to slow compression of the brain and neighboring structures.

"The anterior lobe of the pituitary body," says Schäfer, "is related to the general growth of the body, and especially of the

skeleton, whilst the posterior lobe, which includes the pars intermedia, probably serves to promote the contractility and increase the tone of plain muscular tissue generally, as well as of the heart, and to excite the activity of certain glands, viz. the mammary glands."

The disease usually lasts thirty or more years.

To examine for hypophyseal tumor, obtain an accurately transverse skiagram of the head by placing a bullet in each external meatus, and seeing that the shadows of the bullets are accurately superimposed.

Treatment.—In the stage of hypopituitarism one may try pituitary extract, the dried gland of the ox, gr. ii–iv, t.i.d. An overdose by mouth is apparently not possible. Arsenic, potassium iodide, quinine, thyroid extract, and mercury by inunction (see Part 11) have been used with apparent benefit. Tea, coffee, and tobacco should be avoided.

Have the changing vision corrected from time to time with glasses. Instruct the patient in the use of the fountain syringe for the purpose of clearing out the discharging nasal cavities. The syringe, filled with warm normal saline solution (one teaspoonful of salt to the pint of water), is suspended beside a chair containing a basin. The patient kneels beside the chair, with his head bent over the basin, and the face turned horizontally. The solution is now allowed to flow into one nostril and out through the other, the finger being used as a pinch-cock to regulate the flow. During the flow the patient should breathe through the mouth, and should not swallow, in order to avoid the entrance of fluid into the middle ear. Every now and then the irrigation should be interrupted, and the nose blown to clear it out. Cauterization of hypertrophied erectile tissue may sometimes be advantageously performed to relieve obstruction (see Simple Chronic Rhinitis in Nose Diseases, Part 8). Leonard Mark praises the usefulness of menthol, combined in a lozenge with eucalyptus and licorice, in relieving dryness of the tongue, and headache and faceache.

℞ Menthol ..... gr. xxiv
Eucalyptol .....
Pulv. acaciæ .....
Sacchari albi .....
Pulv. ext. glycyrrhizæ ..... āā ʒi gr. x
Ol. sassafras ..... gtt. i

Make into a stiff mass with simple syrup and divide into 25 lozenges.

Sig.—One every 3 or 4 hours.

For the various aches and neuralgias, however, "the greatest relief is derived from absolute rest or immobility," says Mark. Mark also highly praises the daily use of the faradic foot-bath for a week or two, now and then, for the prevention and cure of trophic ulcers, and as a general, a cardiac, and mucous membrane tonic. The bath consists of a tub of warm water with a copperplate electrode at each end. The current should be smooth and as strong as can be borne with comfort.

The operative treatment of acromegaly is in process of development. Operation is indicated in a growing tumor with compression symptoms.

Acroparæsthesia.—Gr. *ἄκρον* extremity + *παρά* beside + *αἴσθησις* sensation. (Acroparæsthesia signifies paræsthesia of the extremities, usually the upper.)

Etiology.—Overuse of the hands; habitual irritation with cold water; perhaps alcohol, tobacco, tea, and coffee; sexual disturbances; gastro-intestinal disturbances, particularly constipation; neurasthenia; arteriosclerosis; gout; nephritis; menopause; oöphorectomy; tabes; pernicious anæmia; cerebrospinal syphilis; encephalomalacia; myxœdema; acromegaly.

Treatment.—Attend to the cause. Tonics, *e.g.*, iron, quinine (gr. v–viiss at bedtime—Oppenheim), strychnine, arsenic (see Drugs, Part 11), and massage and baths may be serviceable. The faradic arm or foot-bath may be tried. It consists of a tub of warm water with a copperplate electrode at each end. The current should be smooth, and as strong as can be borne with comfort. It may be employed daily for a week or two, and is praised as a general tonic. Give the iodides for arteriosclerosis. Moffitt recommends thyroid extract for "annoying paræsthesias in stout women."

Actinomycosis.—See Skin Diseases, Part 5.

Acute Yellow Atrophy of the Liver.—See Atrophy, Acute Yellow, of the Liver.

Adams-Stokes Syndrome.—See Stokes-Adams Syndrome.

Addison's Disease.—A rare chronic disease of the adrenal or suprarenal glands (tuberculosis, atrophy, syphilis, neoplasm, traumatism) or of similar bodies situated elsewhere, all constituting the chromaffin system (chromaffin meaning staining affinity with chromates), characterized by asthenia, gastro-intestinal disturbances, pigmentation of the skin, and cardiac weakness or lowered cardio-vascular tone. Headache is frequent.

(For other causes of pigmentation of the skin, see Chloasma in Skin Diseases, Part 5.)

The disease is usually fatal in one to three years, but improvement, and even recovery, is possible.

Treatment.—Absolute psychical and physical rest in bed, fresh air day and night, maintenance of body warmth, an easily digestible and nutritious diet, and tonics, such as arsenic, strychnine, and iron (see Part 11), are indicated.

Should nausea or vomiting occur, restrict or stop the food, apply an ice-bag or a mustard plaster (one part mustard to 2–6 parts of flour, made into a paste witb water, and applied between cloths) to the epigastrium, and administer some one of the remedies enumerated under Vomiting. Remove the mustard when the skin has been well reddened. Best of all, unless distressing to the patient, is gastric lavage with hot normal saline solution (a teaspoonful to the pint).

For diarrhœa, restrict the diet, apply heat to the abdomen, wash out the colon, unless distressing to the patient, and administer bismuth in large doses, with, perhaps, opium.

For great cardiac weakness and syncope apply hot water bags over the heart, and administer tincture of digitalis, ♏v, well diluted, t.i.d.p.c.; and, when deemed advisable, aromatic spirits of ammonia, ♏xv–lx, well diluted in water; or strychnine, gr. $\frac{1}{20}$, hypodermically; or camphorated oil, ♏xv–lx, deep into the muscle; or ether, ♏x–lx, hypodermically. Sudden death from syncope sometimes occurs; therefore the importance of peace and quiet.

Organotherapy should be tried in every case, even though it has been usually ineffectual, for great improvement, and even cures, have been reported from its use. It is advised that the adrenal preparations be used with extreme caution, especially in advanced cases, because of the possibility of the occurrence of dangerous symptoms; but Croftan says: "Too much can hardly be given, as no untoward effects, excepting some irritative phenomena about the stomach or intestine, are ever observed from the administration of these preparations by mouth." These observations, however, do not apply to the hypodermic use of adrenalin, as perhaps every practitioner knows from unpleasant experience.

George Dock says: "No positive lines can be laid down for dosage and frequency of administration."

1. Fresh sheep's gland (one gland is equivalent to about 2 mg. adrenalin), 1 to 2 to 3 up to 6 glands a day, if need be. Keep on ice. Grind up with glycerine and normal saline solution (one teaspoonful of salt to the pint of water); allow to stand a half-hour, filter through muslin, and take at once.

2. Powdered suprarenal extract, gr. v–xx, t.i.d.p.c.; the best preparation, says Croftan.

3. Adrenalin, 1:1000 solution, ♏v up to ♏xxx, according to the effect, t.i.d.p.c., well diluted with water (15–20 minims contains about 1 mg. adrenalin).

Discontinue the medication if it causes vomiting.

Since tuberculosis is the commonest cause of Addison's disease, a trial of tuberculin would suggest itself, but it is said to be harmful.

In the presence of syphilis, antisyphilitic treatment is, of course, indicated.

If a tumor is recognizable, an exploratory operation might be considered; but these patients are very susceptible to shock, and, besides, Addison's disease does not develop until both suprarenal glands are affected.

Adenitis.—Gr. *ἀδήν* gland. See Lymphadenitis.

Adenoids.—See Throat Diseases, Part 9.

Adherent Pericardium.—See Pericardium, Adherent.

Adiposis Dolorosa; Dercum's Disease.—(L. *adéps*, fat; *dolor*, pain.)

A rare disease, occurring chiefly in women at or after the menopause, usually those with neuropathic or psychopathic manifestations, and characterized by the presence of localized or diffuse, symmetrical, painful, sometimes tender, fatty swellings, which are never found on the face, hands, or feet.

It should be distinguished from (1) adiposis associated with disturbance of function of the pituitary body (see Acromegaly); (2) multiple lipomatosis associated with general paresis, tabes, sciatica, etc.; (3) symmetrical adenolipomatosis or diffuse symmetrical lipomatosis of the neck; (4) adiposis tuberosa simplex, in which the tumors disappear under diet, baths, exercise and massage (see Obesity), which are "of only temporary benefit" in adiposis dolorosa. (D. J. McCarthy.)

The prognosis is unfavorable as to cure of the lipomatosis, but is good as to life.

Treatment.—Thyroid extract may be tried cautiously in ascending doses, beginning with gr. ss twice a day (see Myxœdema). Pituitary extract may also be tried (see Drugs, Part 11).

Adiposity.—L. *adéps*, fat. See Obesity.

Agraphia.—Gr. *α* priv. + *γράφειν* to write. See Aphasia.

Ague.—Fr. *aigu* sharp. See Malaria.

Ainhum.—See Skin Diseases, Part 5.

Akoria.—See Acoria.

Albuminuria.—The various causes of albuminuria may be conveniently classified as follows:

I. Albuminuria due to other causes than organic kidney disease: so-called constitutional or functional albuminuria; practically always transient.

A temporary or intermittent or cyclic albuminuria, present only at certain times during the day, is common in adolescents. It may follow muscular exertion, mental or bodily strain, violent emotion, sexual excess, a cold bath or exposure to cold, a heavy meal, or the assumption of the upright posture (postural or orthostatic albuminuria). This variety of albuminuria is generally ascribed to a temporary loss of vascular tone. Other causes of constitutional or functional albuminuria are as follows: pyrexia (febrile albuminuria); dyspepsia; carcinoma of the stomach; gastro-intestinal intoxication due to the ingestion of shell-fish, decomposed foods, etc.; the ingestion of much raw egg albumen or too much animal food (alimentary albuminuria); jaundice; glycosuria; anæmia, purpura; scurvy; leukæmia; cachexia; Raynaud's disease; anæsthesia; toxæmia of pregnancy; first few days in the newborn; syphilis; chronic alcoholism; chronic lead or mercury poisoning; obesity; gout; advanced pulmonary, cardiac, or hepatic disease, causing chronic passive congestion; cholera; a malarial paroxysm; an epileptic fit; apoplexy; meningitis; brain tumor; mania; tetanus; tabes; general paresis; head injuries; migraine; delirium tremens; exophthalmic goitre; neurasthenia; various psychoses; excessive use of tobacco; tuberculous ascites; pregnancy, or compression of the inferior vena cava by a tumor; movable kidney; impeded outflow of urine due to ureteral stenosis, ureteral twist, a stone, compression by a tumor, etc.; such kidney irritants as cantharides, turpentine, carbolic acid, benzol, mustard, lead, mercury, arsenic, antimony, phosphorus, salicylic acid, tar compounds, aniline derivatives, petroleum, urotropin, potassium nitrate, potassium chlorate, ether, chloroform; embolism or thrombosis of the renal artery, or thrombosis of the renal vein.

II. Albuminuria due to organic kidney disease, *e.g.*, nephritis, acute or chronic amyloid degeneration, due to syphilis, tuberculosis, or chronic suppuration; kidney traumatism; fatty degeneration; suppurative nephritis; renal tuberculosis; enlarged cystic kidney; renal neoplasms.

For albumin tests, see Urinalysis. Remember that the presence in the urine of pus, due to urethritis, cystitis, ureteritis, pyelitis, or calculus (see Pyuria), of blood from below the kidney, of spermatozoa, of prostatic fluid, or of a leucorrhœal discharge, will cause a positive albumin reaction. Such a "false or accidental albuminuria" should be excluded. The Bence-Jones proteid occurs in the urine in the rare fatal multiple myelomata of the bones (see Urinalysis for its detection).

Treatment.—Attend to the cause. In the functional albuminuria of adolescents and of dyspeptics, enjoin fresh air day and night, daily moderate exercise, adequate clothing (flannel underwear in winter), hot baths with friction of the skin, and a plain, bland diet, consisting chiefly of vegetable food, fruits and milk, with a little fish and white meat occasionally, eggs sparingly. Gaston Lyon advises an absolute milk diet and rest in bed for two or three weeks, and a gradual return to normal diet after the albumin has ceased to appear in the urine, the milk to be resumed if the albumin reappears. One hour before each meal, the patient should drink a glassful of warm Vichy water, or water containing 10–15 grains of sodium or potassium bicarbonate, to which may be added a teaspoonful of lemon juice. For constipation employ sodium phosphate or Rochelle salt (see Drugs Part 11).

Such tonics as iron, quinine, and strychnine may render service in cases associated with anæmia and loss of vascular tone.

If the condition is due, according to Sir Almroth Wright's view, to diminished viscosity of the blood, then calcium lactate, gr. xv, t.i.d. (see Part 11), should be of service.

Yeo says: "Albuminuria in a child having an elongated prepuce has been relieved by circumcision." A focus of infection, such as a diseased tonsil, may cause albuminuria, which disappears after the infection has been eradicated.

Alcaptonuria.—See Alkaptonuria.

Alcoholic Cirrhosis of the Liver.—See Cirrhosis, Portal, of the Liver.

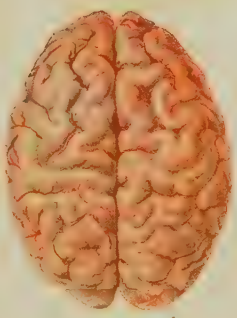
Neuritis.—See Neuritis, Multiple.

Alcoholism.—Arabic, *Al-kohl*, something subtle.

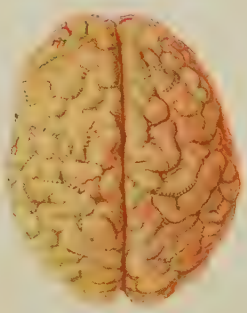
Alcoholism may conveniently be considered under three headings, (1) acute alcoholism, (2) chronic alcoholism, and (3) delirium tremens, or mania-a-potu.

The latter occurs in chronic alcoholism, often as a consequence of such exciting causes as a sudden excess of alcohol, a sudden withdrawal, trauma, mental shock, hemor-

Alcoholic liver
(Cirrhosis)

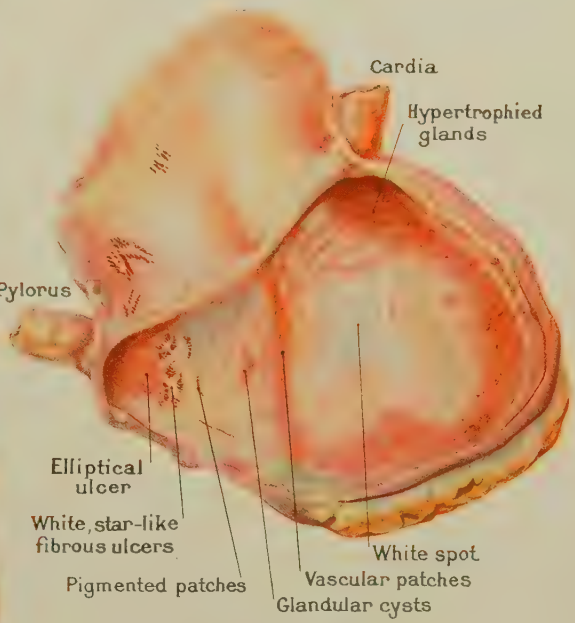


Normal brain

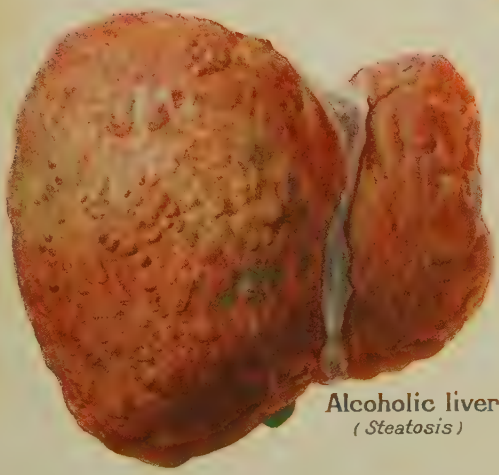


Alcoholic brain
(Meningitis)

Normal liver

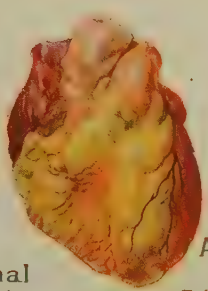


Alcoholic stomach

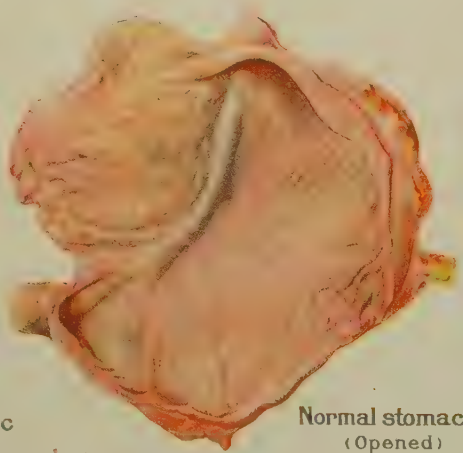


Alcoholic liver
(Steatosis)

Normal heart



Alcoholic heart
(Fatty deposit)



Normal stomach
(Opened)

LAROUSSE MÉDICAL

Action of alcoholism on different organs.
From wax models made from life by M. Jumelin (Tramond-Rouppert edit.)

rhage, an acute infection, particularly pneumonia, an epileptic attack, etc. It is characterized by restlessness, muscular tremor, insomnia, hallucinations, chiefly optic and tactile, disorientation, delirium, and often anxiety and terror. The condition may last from two to ten days. Sometimes the psychosis is one of acute hallucinosis (acute paranoia, acute persecutory insanity), in which there are intense hallucinations, chiefly auditory, delusions of persecution, and a tendency to suicide, while orientation is retained. This condition may last for several days to several weeks. Rarely semi-coma or coma (wet brain or cerebral œdema) follows delirium tremens, and lasts from two to twelve weeks, with a mortality of nearly 75 per cent.

In chronic alcoholism there sometimes develops a symptom-complex characterized by the association of polyneuritis with delusions of time, place, and persons, and a tendency to indulge in "pseudo-reminiscences,"—the so-called Korsakow's syndrome. This condition may last for months, the neuritis clearing up before the psychosis. The neuritis may, however, end in atrophy (see Neuritis, Multiple).

Treatment.—(1) Acute Alcoholism (muscular tremor, nervousness, coated tongue, gastritis, etc., following a spree; dipsomania, or an uncontrollable thirst for alcohol, is here included).

Withdraw alcohol at once, and put the patient to bed. Unless the patient is old or arteriosclerotic, evacuate the stomach, either by lavage or an emetic, such as copper sulphate, gr. v, in solution, every fifteen minutes until effectual; or zinc sulphate, ʒss, in solution, repeated in fifteen minutes if necessary; or powdered ipecac, ʒss. If he is violent, or "fighting-drunk," or even restless, administer a hypodermic injection of apomorphine, gr. $\frac{1}{15}$. This is followed by vomiting and sleep, and the latter may last a number of hours.

It is well to give calomel and soda in divided doses, or in a single dose of calomel, gr. v, and sodium bicarbonate, gr. xv. An enema may be given. Promote free perspiration and diuresis.

℞ Potassii citratis..... ʒii
Liq. ammonii acetatis... ʒvi
M. Sig.—One tablespoonful (pot. cit. gr. x) with lots of water every three hours for a few days.

For insomnia, one may give paraldehyde in water, ʒss–i, repeated in an hour if necessary; or trional, gr. xv–xxx, in hot liquid; or, perhaps best, chloral, gr. xv–xxx, well diluted, best per rectum.

For nervousness, antipyrin, gr. v, t.i.d., or sodium or ammonium bromide, gr. xx–xxx, well diluted, t.i.d., may be of service.

For collapse, apply heat to the body, rub the limbs, administer hypodermically strychnine, gr. $\frac{1}{20}$, or camphor, gr. i–ii in olive oil, ♏xv–xxx, and give aromatic spirits of ammonia, ʒss–i, in a tumbler of water, by mouth.

For alcoholic gastritis, prescribe a light, highly seasoned diet: concentrated broths, meat juices, bovinine, milk, eggs.

℞ Tincturæ capsici, vel
Fl. ext. zingiberis.. ʒii–vi (♏x–xxx per dose)
Extracti nucis vomicæ ..... gr. vi (gr.ss per dose)
Infusi quassiæ, q.s. ad ʒvi
M. Sig.—One tablespoonful in hot water, t.i.d. (for alcoholic gastritis).

℞ Ammonii carbonatis..... gr. v–x
Tincturæ capsici..... ♏x
Infusi quassiæ..... ʒi
M. Sig.—Take in one dose, (for sinking sensations and craving for stimulants.) S. O. L. Potter.

Ammonium chloride, ʒss, is recommended to straighten a drunken man up.

(2) Chronic Alcoholism.—One or two years of institutional treatment is best, but six weeks of treatment may suffice. Having first determined the patient's degree of tolerance, by ascertaining how much alcohol is required each day to prevent the occurrence of abstinence symptoms—*e.g.*, nervousness, irritability, restlessness, insomnia, and muscular tremor—gradually withdraw the alcohol entirely, by about 2 fl. oz. per diem. (F. E. Hare). For undue restlessness during the withdrawal, administer bromide, ʒss–i, well diluted, t.i.d. An occasional hypnotic may also be required: paraldehyde, or trional, or chloral (see Part 11). The diet should be nutritious: milk, two quarts daily, meat juice, eggs, carbohydrates. Prescribe a stomachic:

℞ Extracti nucis vomicæ... gr. $\frac{1}{4}$–$\frac{1}{2}$
Extracti gentianæ..... gr. v–x
Mitte talis pilulæ, no. 30. Sig.—One pill t.i.d.

Daily massage and outdoor exercises, including Swedish movements or the army setting up exercises, should be practiced.

McBride's treatment is well recommended. Atropine and strychnine, āā gr. $\frac{1}{100}$, are given hypodermically three times a day, and the doses are gradually increased until the mouth is continually dry and the pupils dilated, and the patient is receiving gr. $\frac{1}{30}$–$\frac{1}{20}$ of strychnine t.i.d. These drugs should then be continued at a slightly reduced dose for four or five days, and then gradually reduced until none is taken. "The

length of time required for this treatment is about a month or six weeks." It destroys the craving for alcohol usually in a few days.

Ergot is recommended by Lambert (see next column).

During convalescence, implant reiteratingly upon the patient's mind the advice and suggestion that permanent total abstinence is "for him" essential. (F. E. Hare.)

(3) Delirium Tremens.—Put the patient to bed, and if necessary restrain him with sheets. He should be kept under constant surveillance. Many believe that alcohol should not be suddenly withdrawn; but Lambert, who has had a large experience, believes "that alcohol should be absolutely withdrawn in all cases," and strychnine, gr. $\frac{1}{30}$–$\frac{1}{20}$, or camphor, gr. i–ii, in olive oil, ♏xv–xxx, given hypodermically, every four hours or oftener, if stimulation is required. Caffeine is a good stimulant, but it causes wakefulness. Digitalis is lately not so well recommended. A calomel purge, calomel, gr. v, and sodium bicarbonate, gr. xv, should be given in the beginning. Some also advise an emetic dose of ipecac, ʒss.

In the milder cases, paraldehyde, ʒi, diluted, repeated every hour if necessary, for three doses; or trional, gr. xv–xx, every four hours, may be tried. But these narcotics, as well as the bromides, are usually insufficient. Hyoscine, gr. $\frac{1}{100}$–$\frac{1}{80}$, hypodermically, every six hours, or until the pupils become dilated, is better recommended, although it is said sometimes to increase the delirium.

In severe cases, chloral hydrate, in doses of gr. xxx–lx, well diluted, per rectum, is required; or, more effectual still:

℞ Morphinæ ..... gr. ⅛
Chlorali hydrati ..... gr. xv–xxx
Tincturæ hyoscyami ..... ʒss
Tincturæ zingiberis ..... ♏x
Tincturæ capsici ..... ♏iii
Aquæ, q.s., ad ..... ʒss

M. Sig.—Administer in one dose. Repeat in one hour if necessary. (Lambert.)

In the severest cases Lambert injects hyoscine, gr. $\frac{1}{100}$, apomorphine, gr. $\frac{1}{10}$, and strychnine, gr. $\frac{1}{30}$. It must be remembered that chloral and morphine are dangerous drugs, the former poisoning the heart, and the latter tending to produce urinary suppression. Morphine, indeed, should be used only as a last resort. Apomorphine, in the dose of gr. $\frac{1}{10}$, sometimes causes collapse. The hot bath and the cold pack are useful sedative measures.

Lambert recommends the intramuscular injection of ergot:

℞ Extracti Ergotæ (solid) ... ʒi
Chloroformi ..... gtt. iii
Chloretoni ..... gr. iii
Aquæ sterili ..... ʒi

Misce, fiat solut., et filtra.

Sig.—Inject into the gluteal or deltoid muscle 30 drops (about 4 gr. of ergot) every 2–4 hours.

Says Lambert: "It reduces the dilated blood-vessels, lessens the various congestions, and brings about a better equilibrium of the circulation. After it, there is a distinct tendency to a quieter delirium, and less need of restraint; it reduces the tremor, less hypnotic is required, and it diminishes the tendency to 'wet brain.'"

Except when asleep, the patient should be fed regularly, every two or three hours, with highly seasoned, concentrated broths, meat juice, bovinine, milk, and eggs. This is important.

Should cerebral œdema or "wet brain" occur, manifested by semi-coma, rapid, feeble pulse, hyperæsthesia or supersensitiveness to pressure of the skin and muscles, muscular rigidity, contracted pupils, give stimulants—strychnine, gr. $\frac{1}{60}$–$\frac{1}{30}$, hypodermically every two hours; camphor, gr. ii, in olive oil, ♏xxx, hypodermically, every two hours; caffeine sodiosalicylate, gr. ½, hypodermically every two hours. Sceleth and Beifeld "have found ergot harmful as compared with its usefulness in the asthenic type of delirium tremens." Lumbar puncture was also of no service in their hands. The patient should be thoroughly purged; and milk, eggs, and broth should be administered every two or three hours, through the nasal tube, if need be.

During convalescence prescribe stomachics (see Phar. Index).

Aleppo Boil.—See Oriental Sore, in Skin Diseases, Part 5.

Alexia.—Gr. α neg. + λέξις word. See Aphasia.

Alkalinuria.—**Causes.**—Gastric digestion: the urine is sometimes alkaline for a period of two to four hours following a meal; gastric hypersecretion with motor insufficiency and vomiting or lavage; ingestion of alkalies between meals, or of organic acids of the fatty series, such as citric acid, etc., contained in vegetable food; rapid absorption of a transudate or exudate, increasing the amount of alkaline salts in the blood; intestinal hemorrhage; chronic nephritis; neurasthenia; mental depression; sexual excesses; typhoid fever; sometimes pneumonia; sometimes

anæmia; admixture of exudates from the urinary tract.

The alkalinity in the above cases is "fixed"; that is, red litmus paper is permanently blued by the urine. If, however, the blue color disappears when the litmus paper is dried, the alkalinity is termed "volatile," and is due to the bacterial decomposition of urea into ammonium carbamate and carbonate (ammoniacal decomposition), the result of local inflammation in the urinary tract, usually the bladder. (R. W. Webster.)

Alkaptonuria.—The rare, harmless occurrence in the urine of homogentisic acid, and, perhaps, uroleucic acid. Homogentisic acid is possibly derived from the tyrosin of the protein molecule. It reduces Fehling's solution, and turns the urine brown on standing, or on the addition of an alkali (see Ochronosis).

Alternation of Heart-beats.—See Arrhythmia, Cardiac.

Alveolar Abscess.—If the tooth is savable, incise and drain the abscess, and have the tooth treated by a dentist; if not savable, extract the tooth. The so-called "blind" abscess may sometimes be detected only by expert röntgenography. (*q.v.*).

Amaurotic Family Idiocy.—L. from Gr. *ἀμαυρόεν*, to darken; *ἰδιώτης*, private.

A Hebrew family disease of infancy, characterized by idiocy, progressive general muscular weakness and paralysis, rapid blindness (in cases seen early a cherry-red spot may be seen in the region of the macula lutea; later, optic atrophy occurs), and usually marasmus and death before the end of the second year.

The anatomical cause of the disease is a progressive degeneration of the ganglion cells of the central nervous system.

There is a juvenile form of amaurotic family idiocy not restricted to the Jewish race.

There is no treatment.

Amœbic Abscess of the Liver.—See Liver Abscess.

Dysentery.—See Dysentery, Amœbic.

Amyotonia Congenita.—Gr. *α* neg. + *μῦs*, muscle + *τόνος*, tone. L. *congenitus* born with. See Dystrophy, Progressive Muscular.

Amyotrophic Lateral Sclerosis.—Gr. *α* neg. + *μῦs*, muscle + *τροφή*, nourishment; *σκλήρωσις*, hardness. See Atrophies, the Progressive Muscular.

Anacidity; Achlorhydria; Achylia Gastrica.—Anacidity and achlorhydria denote persistent lack of hydrochloric acid in the gastric secretion; achylia, Gr. *α* priv. + *χυλός* chyle, denotes lack of both hydrochloric acid and enzymes (see Dyspepsia; Gastric Indigestion, for the manner of obtaining and testing the gastric secretion). Repeated examinations should be made.

There may be no symptoms, or the symptoms of gastric indigestion, or only intestinal symptoms, that is diarrhœa, due to the presence in the intestine of putrefying undigested food. Diarrhœa sometimes alternates with constipation.

Etiology (Hypoacidity included).—Neurasthenia, hysteria; tabes; anæmia; tuberculosis; nephritis; diabetes; alcoholism; lead poisoning; severe febrile disease; chronic gastritis; gastric cancer; amyloid degeneration of the stomach; cirrhosis or sclerosis of the stomach.

Treatment.—Consider the cause. The diet should be liquid or soft, and served in small amounts at three-hour intervals: vegetables in purée form—potato, spinach, peas, lentils, beans—steamed or boiled fish, raw oysters, scraped raw meat, well-boiled meat, plainly cooked minced meat, sweetbreads, brains, milk, buttermilk, bonnyclabber, cottage cheese, well-cooked gruels—rice, oats, sago tapioca—stale bread, crackers, rusks, cocoa, olive oil, cream, and butter in moderation, predigested foods, such as somatose, which consists of meat albumoses and peptones, also meat extracts, to stimulate the flow of gastric juice. Meat extract is prepared as follows: Thoroughly mix one pound of finely minced beef with one pint of cold water, and set aside for ten minutes. Place in a double boiler—*e.g.*, an oatmeal boiler—and gradually heat the surrounding water to the boiling point. Now decant off the liquid, and, after cooling, skim off the fat.

In the presence of diarrhœa, due to the putrefaction in the intestine of undigested proteins, exclude meat, eggs, and beans. Oil is said to relieve diarrhœa by promoting the secretion of bile and pancreatic juice.

Prescribe strychnine and bitter tonics (see Anorexia) before meals, and dilute hydrochloric acid, 15–20 drops, well diluted in sweetened albumen water, and sucked through a tube to avoid injury to the teeth, during and one-half to one hour after meals. Croftan thinks that the acid and stomachics should both be given before meals. Pepsin, gr. vi–viii (active only in an acid medium), or papain, gr. iv–vii (active in both acid and alkaline media), or pancreatin (active only in an alkaline medium), administered dissolved in water after meals, may or may not be of service.

℞ Pancreatini.....
Sodii bicarbonatis..... āā gr. vii
M. fiat caps. No. 1 Dent. tal. caps. No. xxx.
Sig.—One capsule 15 minutes after meals. (Boas.)

Atony or motor insufficiency, or the presence of excessive mucus, calls for systematic lavage.

In neurotic cases employ local galvanism, etc., as directed under Dyspepsia, Nervous.

Anæmia.—See Anemia.

Anal Fissure.—See Fissure in Ano.

Fistula.—See Fistula in Ano.

Prolapse.—See Prolapse of the Rectum and Anus.

Pruritus.—See Pruritus, in Skin Diseases, Part 5.

Stricture.—See under Rectal Stricture.

Tumors.—See Rectal and Anal Tumors.

Analysis, Gastric.—See Dyspepsia.

Analysis, Urinary.—See Urinalysis.

Anaphylactic Shock.—Gr. *ἀν* neg. + *ψυλάξις* protection.

The occurrence of such symptoms as urticaria or an exanthematous rash, œdematous swelling of the mucous membranes, vomiting, dyspnœa, rapid pulse, cyanosis, swelling of the lymph glands, joint pains and swelling, general malaise, subnormal temperature or fever, perhaps convulsions, collapse, and prolonged prostration, very rarely death, when the injection of a serum from another species of animal (a foreign protein) is followed, after the lapse of six to twelve or more days, by a second injection. These symptoms do not occur if the second dose of serum is given before the sixth day (safer: third or fourth day). In other words, repeated injections of a foreign protein at short intervals is not followed by anaphylactic phenomena, because of the fact that immunity is established before the incubation period has expired. This immunity is only temporary.

Anaphylaxis is a state of supersensitiveness or hypersusceptibility ("sensitization") to the action of a foreign protein, brought about in the manner above described. To avoid possible anaphylactic symptoms when administering a serum, give a preliminary injection of a small trial dose of 0.1 (about 2 drops) to 0.2 to 1.0 c.c., and if after the lapse of ½–2–6–12 hours no untoward result has occurred, give the full dose very slowly. Asthmatic and hay fever subjects, and those closely associated with horses, are particularly liable to anaphylactic shock.

For anaphylactic shock are recommended epinephrine, calcium lactate or chloride, gr. xv–xxx, t.i.d., sodium salicylate, and morphine and atropine (see Part 11), the latter in full doses in urgent cases, combined, if necessary, with artificial respiration (*q.v.*).

Serum disease or sickness designates the occurrence of pyrexia, a rash, and occasionally arthritis, following a latent period of a few days to one or two weeks after the injection of the serum.

Anasarca.—Gr. *ἀνά* throughout + *σάρξ* flesh.—See Œdema.

Anchylostomiasis.—See Ankylostomiasis.

Anemia.—Gr. *ἀν* neg. + *αἷμα* blood.—For diagnostic tests, see Blood Examination.

Etiology.—Intestinal parasites: ankylostoma duodenale or uncinaria Americana (see Ankylostomiasis; the anæmia is of the pernicious type), bothriocephalus latus (see Tapeworm Infection; the anæmia is of the pernicious type), tænia solium (see Tapeworm Infection), oxyuris vermicularis (see Oxyuriasis), strongyloides intestinalis (see Strongyloidosis), trichocehalus dispar (see Trichuriasis or Whipworm Infections), ascaris lumbricoides (see Ascariasis), flukeworm (see Distomiasis), amœba dysenteriæ (see Dysentery, Amœbic); pernicious or cryptogenetic anæmia (*q.v.*); chlorosis (*q.v.*); bad hygiene—poor or insufficient food, poor ventilation, lack of sunlight, overheating, excessive fatigue, overstudy, homesickness, anxiety (Cabot denies that bad hygiene or insufficient food causes anæmia); enlarged tonsils, and adenoids; prolonged milk feeding; sojourn in hot countries; malignant neoplasms; blood parasites: plasmodium malariæ (see Malaria), filaria sanguinis (see Filariasis), distoma hæmatobium (see Distomiasis;) chronic gastro-intestinal affections: chronic gastritis, chronic gastric dilatation, atrophy of the stomach, gastric cancer, intestinal intoxication (*q.v.*), constipation, ulcerative colitis, dysentery, etc.; hemorrhage: trauma, epistaxis, hemorrhoids, phthisis, gastric and duodenal ulcer, gastric or intestinal cancer, intestinal ulcer, intestinal parasites, hepatic cirrhosis, splenic fibrosis, hemorrhagic pancreatitis, dysentery, typhoid fever, nephrolithiasis, kidney tumor, bladder tumor, nephritis, aneurysm, leukæmia, purpura, scurvy, hæmophilia, hæmoglobinuria, abortion or miscarriage, extrauterine pregnancy, post-partum hemorrhage, uterine fibroids, uterine polyp, uterine cancer, etc.; imperfect mastication; œsophageal obstruction; bodily and mental injuries; pregnancy; prolonged lactation; chronic nephritis; chronic suppuration; prolonged fever (the latter four causing an albuminous drain); toxæmia of pregnancy; uræmia; jaundice or cholæmia; rickets; myxœdema; arteriosclerosis; Addison's disease; asthma;

obesity; neurasthenia; trichiniasis; kidney abscess; leukæmia; Hodgkin's disease; purpura; scurvy; splenic anæmia (see Anemia, Splenic); Kala-azar (*q.v.*); anæmia infantum pseudoleukæmica of Von Jaksch (*q.v.*); thymus enlargement; aortic insufficiency; mitral stenosis; neoplasms or osteosclerosis involving the bone-marrow; aplastic anæmia, in which there is aplasia instead of, as in pernicious anæmia, hyperplasia of the erythroblastic tissue in the bone marrow (the disease is acute and fatal within a few months; it occurs chiefly in young females; the color index is low; there is a relative lymphocytosis, no nucleated red blood cells, hemorrhages are common); infections: malaria, syphilis, tuberculosis, gonorrhœa, leprosy, rheumatic fever, typhoid fever, diphtheria, oral sepsis (pyorrhœa alveolaris, etc.), chorea, septico-pyæmia, and malignant endocarditis; chemical poisons: mercury, arsenic, lead, potassium chlorate, nitrobenzol, ricin, guaiacol, male fern, pyrogallic acid, phenocoll, lactophenin, phenacetin, acetanilid, cocaine, opium, alcohol, nitroglycerin, poisonous mushrooms, iodides, carbon monoxide, etc.

Treatment of Anæmia as Such.—A. Acute Anæmia.—Rest, fresh air, and sunlight, and a concentrated, nutritious, easily digestible diet, administered every three or four hours, are the chief requisites: fresh beef juice, finely minced meat, bovinine, vinsip, ferroglidine, iron somatose, blood, fish, raw oysters, bone-marrow, eggs, milk, carbohydrates (oatmeal or wheat gruel), vegetables in purée form (spinach, lentils, beans, peas, asparagus), apple sauce, strawberries. If the stomach is in good condition, and fever and tuberculosis are absent, iron (see Part 11 for doses at various ages) may be prescribed. It may be given by mouth or hypodermically. Arsenic (*q.v.*) may also be of value (except in nephritis).

℞ Pil. ferri carbonatis (Blaudii)... gr. v
Recent præparat. pulv. in caps. No. 100.
Sig.—One pill t.i.d.p.c., increased by one pill each week until 3 or 4 or 5 pills are taken t.i.d.

To prevent gastric solution and irritation, the powder may be dispensed in gelatin capsules hardened with formalin; e.g., Sahli's glutoid capsules, grade II of hardness.

℞ Ferricarbonatis saccharati..... gr. x (gr. ss per dose)
Olei menthæ piperitæ... gtt. ii
Pulveris cacao..... ʒi
Misce et fiat pulvis. Div. in chart. cerat. No. xx.
Sig.—One powder three or four times a day, after meals.

℞ Tincturæ ferri chloridi ʒi (♏xv–xxx per dose)
Glycerini..... ʒi
Syrupi aurantii, q.s. ad ʒiv
M. Sig.—One or two drams in water, t.i.d.p.c., to be taken through a glass tube, followed by rinsing and brushing of the teeth.

℞ Pil. aloes et ferri U.S.P. (gel. coat.), No. i
Dent. tal. pil. No. 30
Sig.—3–5 pills daily.

℞ Ferri et potassii tartratis, vel ferri et ammonii citratis..... ʒiss (about gr. iii per dose)
Syrupi limonis....
Aquæ distillatæ, aa ʒii
M. Sig.—One dram 3 or 4 times a day, after meals, in sherry wine.

℞ Syrupi ferri iodidi. ʒii
Sig.—One-half to one dram, well diluted, t.i.d.p.c., to be taken through a glass tube.

℞ Liquoris ferri et ammonii acetatis (mist. Bashami) recent. præparat..... ʒviii
Sig.—One ounce, t.i.d., in water (used in nephritis because of its diuretic and diaphoretic properties).

If indigestion, vertigo, and insomnia are produced by the above inorganic preparations, try the organic preparations or chalybeate mineral waters given below. The organic preparations are, however, inferior in hæmatinic value to the inorganic salts.

℞ Ovoferrin..... ʒxii
Sig.—One tablespoonful in water, t.i.d.a.c.

℞ Ferratini (acid albuminate of iron), gr. viii
Dent. tal. caps. No. 20
Sig.—One capsule t.i.d.

℞ Ferri albuminatis..... gr. x–xxx–ʒii
Dent. tal. caps. No. 20
Sig.—One capsule t.i.d.p.c.

℞ Hæmol..... gr. ii–viii
Dent. tal. pulv. in chart. cerat. No. 30
Sig.—One powder one-half hour before meals.

℞ Hæmogallol..... gr. v–x
Saccharini..... gr. ss–i
Pulveris cacao..... q.s.
Misce talis tabellæ sive pulveres in chart. cerat. No. 60.
Sig.—One tablet or powder one-half hour before meals.

℞ Ferri peptonati..... gr. v–x
Dent. tal. caps. No. 20
Sig.—One capsule, t.i.d.

Ferruginous Waters.—Saratoga and Sweet Chalybeate in Virginia, in America; Pyrmont, Franzenbad, Kissingen, and Langenschwalbach, in Germany and Austria; Spa in Belgium; St. Moritz, Levico, and Roncegno, in Switzerland.

For hypodermic use:

℞ Ferri et ammonii citratis, solut. aq. neutral. steril., 10%, 1.0 c.c.
Dispense in sterile ampoules.
Sig.—Inject one c.c. (gr. iss per dose) daily or every other day deep into the skin of the back or thigh, using a platinum hypodermic needle. (Forchheimer.)

For infants, the albuminate bitter wine, sweet wine, and wine of the citrate (see Part 11) preparations of iron are appropriate; for older children, reduced iron, and Blaud's pills.—Holt. Codliver oil, and malt extract are often useful (see Malnutrition).

Blood transfusion (*q.v.*) is of value.

For the treatment of severe post-hemorrhagic anæmia, see Hemorrhage.

B. Chronic Anæmia.—Mental and physical rest, fresh air day and night, hot baths, warm clothing, especially warm footwear (wool in winter, flannel and silk in summer), and an abundance of nutritious, easily digestible food, are the chief requisites. Prescribe particularly foods rich in iron—*e.g.*, meat, fresh meat juice, blood, bovinine, vinsip, ferroglydine, iron somatose, bone-marrow, spleen, liver, oysters, fish, eggs, oatmeal, lentils, beans, peas, spinach, asparagus, apples, and strawberries. Milk is also valuable.

Iron (see under Acute Anæmia for formulæ) and arsenic may be given if the stomach is in good condition. The elixir ferri, quininæ, et strychninæ phosphatum, one teaspoonful well diluted, t.i.d.p.c., is a good preparation.

Iron should not be given in pulmonary tuberculosis, or arsenic in nephritis. (Croftan.)

For the treatment of anorexia, see Anorexia.

Anæmia Infantum Pseudoleukæmica of Von Jaksch.—This affection of doubtful identity is characterized by enlargement of the liver, lymph-nodes, and spleen (the last is greatly enlarged), and the following blood picture: marked reduction in red blood cells and hæmoglobin, numerous nucleated red cells, marked leucocytosis (see Blood Examination for laboratory technic). Most authorities believe the condition to be a severe secondary anæmia, or pernicious anæmia, or leukæmia.

Prescribe both arsenic and iron (the saccharated carbonate) and the diet recommended for rickets (*q.v.*). Give of Fowler's solution one drop four or five times a day, well diluted, after meals, for a long period.

Anæmia, Pernicious (idiopathic, cryptogenetic).—Gr. ἴδιος own + πάθος disease; κρυπτός hidden + γένεσις origin.

A fairly common chronic, remittent, usually fatal disease of unknown origin, occurring usually after the thirty-fifth year of age, characterized by a severe anæmia of slow and insidious onset, general weakness, breathlessness, palpitations, gastro-intestinal crises, and often degenerative spinal-cord symptoms. The blood shows a great reduction in the number of red blood cells, which are deformed (poikilocytes), abnormally large (macrocytes), and often stain abnormally (polychromatophilic degeneration), a high-color index, the presence of normoblasts and megaloblasts (small and large nucleated red cells), and a normal or diminished leucocyte count (polymorphonuclear leucopænia). The preponderance of megaloblasts in the blood picture is considered pathognomonic (see Blood Examination).

Fig. 1.—Blood picture of pernicious anæmia, showing *a*, poikilocytes; *b*, macrocyte; *c*, normoblast, and *d*, megaloblasts.

The skin has a lemon-yellow tint, and the subcutaneous fat is well preserved. From two to six or more spontaneous remissions, lasting from three months to four years, or longer may occur. These remissions are characteristic of the disease.

Death usually occurs in from one to three or four or more years. Recovery has possibly occurred, but is rare.

Treatment.—Of first importance are prolonged rest in bed, fresh air day and night, and an abundance of nutritious food served in small amounts every three hours. General massage is helpful. All carious teeth should be removed or treated, the teeth scaled, if need be, and the mouth kept clean with castile soap and water and antiseptic mouth-washes (see Pyorrhœa Alveolaris). Gastric and intestinal lavage is recommended. Since improvement often follows a severe diarrhœa, laxatives may be tried, *e.g.*, the fluid extract of cascara sagrada (average dose, ℥xxx) in sufficient dosage to

produce at least two watery stools a day, as suggested by Cabot. Croftan believes that anthelmintics (see Ankylostomiasis) should be given a full trial in every case. A patient of the writer's, in her third relapse, with marked ataxia and feebleness, apparently almost completely recovered following a course of large doses of thymol, which acted as a hydragogue cathartic. She died, however, with pneumonia, about two years later.

Hydrochloric acid and pepsin are usually indicated (see Anacidity).

Diarrhœa, unless excessive, should probably not be combated.

Arsenic is of great value:

℞ Liquoris potassii arsenitis (Fowler's solution)..... ℥i

Sig.—Two drops, well diluted, t.i.d.p.c., gradually increased by 3 to 5 drops every five or six days, up to 10–15–20–25 drops t.i.d.

The maximum dose may be taken for weeks or months, but the arsenic should be stopped should any of the following symptoms occur, viz.—belching and epigastric pain and soreness, nausea, vomiting, thirst, diarrhœa, odor of garlic in the breath, burning in the mouth, salivation, conjunctival congestion, itching, burning, or swelling of the eyelids, brownish pigmentation of the eyes, skin eruptions, peripheral neuritis. After these symptoms have subsided, the arsenic may be resumed, but in much smaller doses.

Other eligible arsenic preparations are: arsenous acid, gr. $\frac{1}{100}$, in pill form, one pill t.i.d.p.c., gradually increased to three and five pills t.i.d.; and salvarsan or neosalvarsan intramuscularly or intravenously (see Syphilis).

Splenectomy is lately advocated, preceded, if need be, and followed by blood transfusion (*q.v.*). Says H. Flörcken: "The most convenient access to the spleen is afforded by an incision parallel to the left costal arch with a continuation backward quite to the spinal column."

No permanent cure of pernicious anæmia has as yet been discovered.

Anæmia, Splenic.—"Among the conditions which may give rise to the splenic type of anæmia we find gummatta of the spleen, large round-cell sarcoma of the spleen, chronic splenitis of the malarial type, and splenomegaly associated with cirrhosis of the liver." (R. W. Webster.)

Primary splenomegaly with anæmia is a rare, very chronic disease of the spleen, of unknown cause, characterized by progressive enlargement of the spleen (fibrosis), no lymphatic enlargement, often pigmentation of the skin, a tendency to hemorrhage from the mucous membrane, with, eventually, the occurrence of anæmia of a secondary type, and cirrhosis of the liver, ascites and jaundice (Banti's syndrome). The following blood picture is presented: only slight reduction in the red-cell count, marked reduction in the percentage of hæmoglobin, consequently a low-color index, very rarely poikilocytes or nucleated reds, leucocytes usually diminished with a relative (not absolute) lymphocytosis (see Blood Examination for laboratory technic; see also Splenomegaly and Jaundice for the many causes of these conditions).

Treatment.—Treat the anæmia by rest, fresh air, and abundance of good food (see Anemia,), and arsenic. Careful X-ray (*q. v.*) applications to the spleen may prove effectual. Splenectomy is curative. It should be done before the liver has become involved and ascites has developed. In the presence of hepatic cirrhosis the operative mortality is 19 per cent. In the separation of perisplenic adhesions there is great risk of fatal hemorrhage. In the presence of ascites epiplopexy may be performed.

It should be borne in mind that splenectomy is contraindicated in leukæmia, polycythemia, malaria, aplastic anæmia, atrophic cirrhosis of the liver, and usually tuberculosis and syphilis.

Aneurysm.—Gr. *ἀνεύρυσμα* a widening. The general diagnostic signs of aneurysm are: a visible pulsating tumor, the pulsations of which are expansile, punctate, and heaving; a palpable thrill; dulness on percussion; a systolic bruit on auscultation, and a diastolic shock. An arterio-venous aneurysm is manifested by great venous distention and the presence of a humming-top murmur on auscultation. An X-ray (*q.v.*) examination should be made.

Following is an enumeration of the possible signs and symptoms of a thoracic aneurysm: tracheal tugging, felt during expiration as well as during inspiration (the latter association is frequently normal); inequality of the radial pulses and of the carotid pulses, compression of the cervical sympathetic, causing at first dilatation of the pupil due to nerve irritation, and, later, contraction of the pupil, due to nerve paralysis, rarely flushing, sweating, and drooping of the eyelid on the affected side; compression of the left recurrent laryngeal nerve, causing

spasm of the laryngeal adductors with urgent symptoms, or paralysis with a cracked voice and a brassy or goose cough; compression of the trachea or bronchus, causing stridor or dyspnœa, cough, tracheitis, bronchitis, hæmoptysis from leaking of the aneurysm, perhaps bronchiectasis; compression of the superior vena cava, causing congestion of the veins of the head, neck, and arm; compression of the œsophagus, causing dysphagia; pain, sometimes attacks of angina pectoris. Always examine the back.

Remember that the preternatural throbbing or pulsation which is present in the following conditions may simulate aneurysm, *e.g.*, aortic insufficiency, anæmia, neurasthenia, hysteria, exophthalmic goitre, dilatation of the heart, pulsating pleurisy, a pulsating solid tumor, especially a mediastinal tumor, retraction of the right lung in fibroid phthisis uncovering the heart, diffuse dilatation of the aortic arch following long-standing hypertension associated with nephritis or arteriosclerosis, dislocation of the heart in curvature of the spine. Also, in pulmonary tuberculosis or cancer of the œsophagus, the occurrence of substernal pain, cough and aphonia may wrongly suggest the presence of aneurysm.

Osler says: "It is to be remembered that no pulsation, however forcible, or the presence of a thrill or a systolic murmur, justifies the diagnosis of abdominal aneurysm unless there is a definite tumor which can be grasped and which has an expansile pulsation."

Prognosis.—The prognosis is grave, but cure is possible.

Etiology.—Syphilitic mesarteritis is undoubtedly the most important cause. Other acute infections—*e.g.*, typhoid fever, influenza, pneumonia, rheumatic fever, scarlet fever, erysipelas, septicæmia, and possibly malaria and tuberculosis—may predispose. Hard work and alcohol are factors; also lead, tobacco, auto-intoxication (gout, Bright's disease), senile arteriosclerosis, embolism, external trauma.

Treatment.—The aims of medical treatment are the reduction of arterial tension to a minimum and the promotion of clotting. These ends are sought by absolute rest in bed, including the use of a bed-pan, for from two to six months, restriction of the diet, especially liquids, to a minimum, and the administration of potassium iodide, beginning with gr. v, well diluted, t.i.d.p.c., and gradually increasing to gr. xx–xxx t.i.d. Osler says that doses larger than gr. xx t.i.d. are unnecessary.

℞ Solut. potassii iodidi concentrati . . . . ℥i

Sig.—Five drops t.i.d.p.c. in a half or full glass of milk, increased by one drop each day up to twenty drops t.i.d.

The bowels should be regulated; constipation and straining should be avoided. Cascara sagrada (see Part 11) should be useful for this purpose.

The diet should consist principally of milk and vegetables. Meat, fish, preserves, cheese, and spices should be avoided; coffee, tea, alcohol, and tobacco should be prohibited. Tufnell's starvation diet is unnecessary. Indeed, Gaston Lyon declares that it is less important to regulate the quantity than the quality of the food and drink.

Adjuvant measures are: the withdrawal from the veins of six to ten ounces of blood every week for five or six weeks; the application of the ice-bag or Leiter's coil for several hours at a time with several hours' intermission; the administration of calcium lactate, gr. x–xv–xl, three or four times a day, regulating the dose according to the pulse-rate, *i.e.*, diminishing the dose if the pulse-rate rises (Yeo):

℞ Calcii lactatis (Merck's or Squibb's soluble salt) . . . . . gr. x–xl

Fiat pulvis una et dispense in chart. cerat. Mitte talis 16.

Sig.—One powder in water three or four times a day for one or two days every week.

(if continued longer than three days it is said to diminish the coagulability of the blood); the subcutaneous injection, every other day, of 200–250 c.c. of a 2 per cent. solution of sterile gelatin (Merck's) in 0.7 per cent. sodium chloride solution, for the purpose of increasing the coagulability of the blood (gelatin, however, quickens the pulse-rate).

This regimen demands a great deal of patience and fortitude on the part of the patient, and is, perhaps, scarcely feasible if the sac, as shown by the X-ray, is large, or the dilatation diffuse. In any case, the possibility of a cure by these means is uncertain.

In early aneurysm active antisyphilitic treatment should be employed.

Phenacetin, antipyrine, pyramidon, and morphine are indicated for distressing pain; nitro-glycerine for anginal attacks (see Part 11 for formulæ). Venesection is valuable for the relief of urgent dyspnœa and cyanosis. In laryngeal spasm, if relaxation is not effected by the inhalation of chloroform, it may be necessary to perform tracheotomy (*q.v.*). Tracheotomy and the passage of a

long soft cannula beyond the point of compression is rarely demanded.

The operative treatment of thoracic and abdominal aneurysms (only the sacciform, not the fusiform) is sometimes successful. It includes (*a*) wiring the sac combined with electrolysis, or the passage of a constant current through the blood by the means of two fine electrodes introduced within the sac; and (*b*) needling or scarifying the inner sac-wall. The patient should be at absolute rest and on the medical treatment described above for at least a month before the operation, and for at least a month after the last trace of expansile pulsation has disappeared; or, altogether, from three to five months.

Peripheral aneurysms may be cured by using Halstead's metal band applied above the sac, or by suture of the endothelial walls.

Angina Ludovici; Cellulitis of the Neck.—See Ludwig's Angina.

Angina Pectoris; Breast Pang.—A not uncommon cardio-vascular disease, characterized by paroxysmal attacks of agonizing pain and a sense of constriction in the region of the heart, the pain extending into the arms (usually the left) and neck, and sometimes present in other and distant parts. The cause of the attack is presumably a myocardial ischæmia, due to sclerosis and perhaps spasm of the coronary artery, and excited by muscular effort, mental emotion, flatulent distension of the stomach, cold, etc.

Syphilis, arteriosclerosis, excess in eating, drinking, and smoking, and habitual worry and mental stress are predisposing causes. An important cause is aortitis, either syphilitic (*q.v.*), or due to such acute infections as rheumatic fever, scarlet fever, influenza, typhoid fever, variola, diphtheria, septic infection. Syphilis is the commonest cause. Angina pectoris occurs in children.

Anginal attacks not due to organic coronary disease may occur as a result of the excessive use of tobacco, tea or coffee, dietetic errors, constipation, hysteria, neurasthenia, hyperthyroidism, valvular heart disease, especially aortic insufficiency, adherent pericardium, and acute cardiac overstrain (angina nervosa; angina vasomotoria; pseudo angina; toxic angina; reflex angina).

Prognosis.—This is serious in true angina due to coronary sclerosis. Sudden death during a paroxysm sometimes occurs. The prognosis in other anginas is usually good, depending upon the cause.

Treatment.—Enjoin a quiet life, physically and mentally, and the avoidance of tea, coffee, alcohol, tobacco, and constipation. The diet should be bland and easily digestible: milk, buttermilk, eggs boiled three minutes, well-cooked cereals, vegetable purées, fruit; no tea, coffee, alcohol, hot breads, pastry, soups, spices, excess of meat, of salt, or of fluids. A glass of warm water one hour before each meal may be beneficial. Frequent warm baths with friction of the skin are advised (no cold baths, no cold sheets at night). Flannel should be worn next the skin.

To prevent attacks the following drugs are prescribed:

℞ Sodii vel potassii iodidi, solutionis concentrati ..... ℥ss

Sig.—Five drops (or less), well diluted in milk, three or four times a day, p.c.

Give the iodide continuously, unless symptoms of iodism occur (*q.v.* in Part 11), for a year or longer. It is well, perhaps, to omit it for about ten days in each month. (Osler.) At the same time nitroglycerin may be given.

℞ Spiritus glonoini (1% alcoholic solution of nitroglycerine) ..... ℥ss

Sig.—One drop in water t.i.d., increased by one drop every four or five days until flushing and headache occur, then reduced several drops, and occasionally increased tentatively.

♏viii–x may have to be given to produce the desired physiological effect. It should be given intermittently for two or three weeks at a time. Instead of the drops, tablets may be prescribed (tabellæ trinitrini, gr. $\frac{1}{100}$), and gradually increasing, if need be, to gr. $\frac{1}{20}$ or even $\frac{1}{10}$). Nitroglycerin acts quicker dissolved in the mouth than when swallowed.

In place of nitroglycerin one may use erythrol tetranitrate, drop doses of the concentrated solution, or tablets, gr. $\frac{1}{12}$, every four hours, increasing to gr. $\frac{1}{3}$–$\frac{3}{4}$, or until flushing, throbbing, or slight transient faintness indicates that the physiological limit has been reached. Intermit the drug for several days every two weeks.

Sodium or potassium nitrite is another eligible preparation, gr. i–iii t.i.d. in milk or water, the dose being regulated according to the production of flushing and headache.

Theobromine, gr. xv–xlv *pro die*, or diuretin, gr. xv–xlv *pro die*, is also well recommended as a preventive of attacks.

Syphilitic cases require, of course, antisyphilitic treatment.

For the attacks themselves employ nitrite of amyl in perles; a perle is broken in a handkerchief from which the contents are inhaled; one, two, three, or four perles may be inhaled at intervals. Or, one drop of a one per cent. solution of nitroglycerin may be placed upon the tongue every minute until the arterial tension is lowered or flushing and headache occur; sometimes 10–20

drops being required. (Hoover.) Phenacetin, antipyrine (see Part 11), or pyramidon may prove to be the best for securing relief. Morphine, gr. $\frac{1}{8}$–$\frac{1}{4}$–$\frac{1}{3}$, hypodermically, or chloroform inhalation, may be required. It may be well to apply heat or a mustard plaster to the precordium, and administer hot drinks. The galvanic current, with the anode over the vagus in the neck, and the kathode over the heart, and a current of 20 milliampères for five minutes to each side of the neck, is well recommended by J. O. Hirschfelder. After an attack, the patient should rest for several hours or days.

In the neurotic cases tonics and sedatives are of service. Liq. potassii arsenitis (Fowler's solution), gtt. iii–v, well diluted, t.i.d.p.c.; elixir ferri, quininæ, et strychninæ phosphati, one teaspoonful in water t.i.d.; zinc valerianate, gr. ii–v, with phosphorus, gr. $\frac{1}{60}$ in pill, t.i.d.; the Weir Mitchell treatment and hydrotherapy; sodium or strontium or ammonium bromide, gr. x–xv–xx, well diluted in water, t.i.d., for nervousness and anxiety; the nitrites for high tension; ergotin, gr. ii, t.i.d., for vasomotor instability; phenacetin, antipyrine, or pyramidon for anginal attacks. Correct air swallowing by keeping the mouth open.

Angina, Pseudo.—Gr. *ψευδής* false. See Angina Pectoris.

Vincent's.—See Stomatis, Ulcerative.

Angiocholitis.—See Cholangitis.

Angioneurosis of the Kidney.—Gr. *ἀγγεῖον* vessel + *νεῦρον* nerve. See under Hematuria in Part 3.

Angioneurotic Œdema.—See Skin Diseases, Part 5.

Ankylostomiasis; Uncinariasis; Hookworm Disease.—Gr. *ἀγκύλος* bent + *στόμα* mouth. L. *uncinátus*, hooked.

Other names that have been given to this disease are tropical chlorosis, Egyptian chlorosis, brickmaker's anæmia, tunnel anæmia, miner's cachexia, dirt-eater's disease, mountain anæmia.

Ankylostomiasis is a common parasitic disease caused by the hookworm (ankylostoma duodenale, or uncinaria Americana, or necator Americanus), which lives in the intestine, and gives rise to a chronic anæmia of the pernicious type with eosiniphilia. The hookworm embryos or larvæ, which live in mud or muddy water in an encysted state, gain entrance to the body either through the skin (ground-itch) or the mouth. Ground-itch is an itching vesiculo-pustular dermatitis occurring usually between the toes. The larvæ travel from the skin through the blood and lymph to the lungs, where they enter the air passages, and finally reach the mouth in the bronchial mucus, and are swallowed.

The diagnosis of ankylostomiasis is made by finding the ova in the stools (washed through cheesecloth), see under Worms.

Fig. 2.—Hookworm ova.

Treatment.—The following prophylactic instructions should be given: Wear shoes and stockings, keep the hands clean, boil the drinking water, thoroughly wash raw vegetable food, do not defecate upon the surface of the ground, but in privies or latrines. Fæces is disinfected by burying eighteen inches deep, by freezing, burning or mixing with an equal amount of bichloride solution, 1 : 200.

The following treatment is curative: In the evening purge the patient with Epsom salt or Glauber's salt, ℥v–x, and allow no supper. At 6 A.M. the following morning, or after the bowels have moved freely, give thymol, gr. xxx, in capsule, or in an emulsion with mucilage of acacia and syrup; at 8 A.M. repeat the dose (or 20 grains may be given at 6, 7, and 8 o'clock); and at 10 A.M. give an ounce of sodium or magnesium sulphate, or senna, or calomel (see Part 11). Keep the patient in bed on the right side to hasten the passage of thymol through the stomach; and allow no food and very little water on the day of treatment. No alcohol, oil, fat, alkali, or other drug should be allowed on the day before or during the thymol administration, as alcohol and oils dissolve thymol, and other drugs may be incompatible with it.

The thymol treatment should be repeated one day each week until no ova are found in the stools. If this treatment fails, Riesman suggests that ammonium chloride (see Part 11) be first given for the purpose of expelling a possible accumulation of mucus from the bowel.

The dose of thymol at different ages or sizes is as follows: under 5 years in age or size, about $7\frac{1}{2}$ grains; 5 to 10 years, 15 grains; 10 to 15 years, 30 grains; 15 to 20 years, 45 grains; 20 to 60 years, 60 grains; above 60 years, 45–30 grains.

Conditions unfavorable to the administration of thymol are: great debility, very old age, very low temperature, pregnancy, advanced cardiac or other organic disease (fatty

heart, nephritis, anasarca), chronic diarrhœa, dysentery, tendency to vomit. (Stiles.)

Beta-naphthol is also well recommended: Give one ounce of sodium sulphate or a half-ounce of magnesium sulphate in the evening, and no food. Keep the patient in bed the next day, and give 15–30 grains (women, 25 grains) of beta-naphthol at 6 A.M., another dose at 8 A.M., and another at 10 A.M.; at 12 noon give 1 ounce of sodium sulphate or 6 drams of magnesium sulphate.

Oil of chenopodium (see Drugs) is also efficient. Alessandrini praises chloroform, 3–4 gm. dissolved in castor or olive oil in a single dose; not to be repeated in less than a week.

The hookworm inhabits the first portion of the jejunum. The most effectual method of treatment to date is that introduced by John L. Kantor. A light supper, usually of rice and milk, is given the evening before treatment; no preliminary catharsis. About 7:30 the next morning the duodenal tube is swallowed on the fasting stomach, and the patient is kept upon his right side until the bucket has entered the duodenum, as ascertained by the following tests:

Bucket in Stomach.—a. Aspiration (using a glass syringe of 30 c.c. capacity) withdraws clear fluid, usually positive to Congo paper.

b. If water is injected, followed by a syringeful of air to clear the tube, more than two-thirds of it can be withdrawn on the next aspiration.

c. The injection of air is not followed at once by borborygmi.

Bucket in Duodenum.—a. Aspiration withdraws golden-yellow, viscid bile, negative to Congo paper.

b. Water injected cannot be recovered by aspiration.

c. The injection of air is apt to be followed by borborygmi.

d. A colored fluid, such as grape juice, swallowed alongside the tube, cannot be recovered by aspiration.

When the tube has entered the duodenum (15 to 60 minutes), inject 3 c.c. of oil of chenopodium, followed by a barrel or two of air to expel all the oil from the tube. After six minutes, inject two or three ounces of a warmed, saturated solution of magnesium sulphate, to rapidly carry off the chenopodium. Then remove the tube. Keep the patient in bed until the next day. Give a light meal at supper time.

Ground-itch should be treated as follows: If seen in the very beginning stage of red spots, apply turpentine for the purpose of destroying the larvæ. In the later stages, open vesicles, blebs, and pustules, and soak the parts in hot bichloride solution, 1 : 2000, or boric acid solution. The lesion is thereby healed in ten to twelve days.

Anoci-Association.—See under Shock.

Anorexia; Loss of Appetite.—Gr. *ἀν* without + *ὄρεξις* appetite.

Anorexia in Adults.—Lack of appetite is particularly pronounced in chronic gastric disease, *e.g.*, cancer, chronic gastritis, gastroptosis, gastrectasia, cirrhosis of the stomach, in febrile conditions, anæmia, tuberculosis, chronic nephritis, morphinism, tobacco addiction, the use of belladonna, anorexia nervosa (hysteria, neurasthenia, emotion, insanity), etc. In anorexia nervosa the loss of appetite may be extreme and persistent, and death may even result.

Treatment.—Consider the cause. The following bitter tonics are recommended as useful appetizers, *e.g.*, gentian, calumba, quassia, chirata, cardamom, cinchona, condurango, and nux vomica (see Drugs).

Several bitters may be combined in one prescription:

℞ Tincturæ nucis vomicæ.... ʒv (mx per dose)
Tinct. gentianæ comp..... q.s. ad ʒiv
M. Sig.—A teaspoonful in a quarter glass of water, t.i.d. a.c.

℞ Tincturæ nucis vomicæ.... ʒi (mx per dose)
Tinct. cinchonæ comp.... ʒxi
M. Sig.—Two teaspoonfuls t.i.d. (S. Theobald.)

℞ Tincturæ rhei aromatici... ʒiiss (mx per dose)
Tincturæ nucis vomicæ.... ʒiii–iv (mxii–xvi
Tincturæ gentianæ comp.. ʒiss per dose)
Tincturæ aurantii amaræ.. q.s. ad ʒiv
M. Sig.—Two teaspoonfuls in water shortly before meals. For anorexia in atonic dyspepsia. (Modification of Huchard's formula.)

℞ Acidi hydrochlorici diluti... ʒi
Sig.—Twenty drops in water, 15 minutes before meals, as a stomachic. (Ortner.) Strychnine sulphate, gr. 1/30, or tr. nucis vomicæ, mx, may be added to each dose.

℞ Orexini basici..... gr. v
Fiat capsula una; mitte talis. 5.
Sig.—Take one capsule in the middle of the afternoon, followed by a full glass of water or milk. (Croftan.)

Penzoldt gives it at 10 A.M., followed by a cup of soup. Says Croftan: "After the fourth or fifth day the further administration of the remedy is generally superfluous, especially as its effect wears off. It is often good practice to stop the administration of orexine for a week and then to resume the use of the medicine for four or five days again." He says that "basic orexine is better than orexine." The dose of the latter is given as gr. v in capsule t.i.d.

Alcohol (a whisky cocktail before eating) is efficacious; also liquids during meals.

It may be well to advise, on rising, and also one-half to one hour before meals, a glassful of hot water containing one-third of a teaspoonful of sodium bicarbonate. Gastric lavage with warm normal saline

solution (one teaspoonful to the pint) may be useful in gastric disorders.

For anæmia prescribe Blaud's pills, iron albuminate, the elixir ferri, quininæ, et strychninæ phosphati, one teaspoonful in water t.i.d., or arsenic (see Part 11).

For anorexia nervosa employ absolute rest in bed, fresh air day and night, isolation, massage, hydrotherapy, electricity, and gavage or rectal feeding (*q.v.*), if necessary. In employing cutaneous faradization or galvanization, apply two large plate electrodes, well moistened, over the stomach, or the anode to the epigastrium and the cathode to the spine, and use a current strong enough to produce visible twitchings of the abdominal muscles for no longer than ten minutes.

Anorexia in Infants—Causes: wrong feeding, overfeeding, limited digestive capacity, feebleness, acute disease.

Treatment.—See under Inanition.

Anorexia Nervosa.—See Anorexia.

Anosmia.—See Nose Diseases, Part 8.

Anterior Crural Nerve.—See Lumbar Plexus.

Anterior Poliomyelitis, Acute.—See Poliomyelitis, Acute.

Poliomyelitis, Chronic.—See Atrophies, the Progressive Muscular.

Tibial Nerve.—See Sacral Plexus.

Anthracosis; Coal-miner's Lung.—Gr. ἄνθραξ coal. See Pneumokoniosis.

Anthrax.—See Skin Diseases, Part 5.

Antidotes.—L. *antidótum*, from Gr. ἀντί against + διδόναι to give. See Poisoning.

Anuria; Ischuria; Oliguria.—Gr. ἀν neg. + οὖρον urine; ἴσχειν to check; ὀλίγος scanty.

Anuria (arrest or suppression or abnormal scantiness of the urinary secretion) should be distinguished from retention (*q.v.* in Genito-Urinary Diseases, Part 3,). Oliguria refers to a twenty-four-hour secretion below about 800 c.c.

Etiology.—Blocking of the ureters with calculi, fibrin, pus, mucus, bits of tissue or new-growths; stone in one ureter or kidney, with reflex inhibition of the other kidney; traumatism or infection of one kidney, with reflex inhibition of the other kidney; one ureter blocked and the other kidney functionally inactive; blocking of a single ureter of fused kidneys, or of the common stem of the two ureters; removal of the only kidney; removal of the only sound kidney; thrombosis of both renal arteries; collapse after severe injuries, operations, the passage of a catheter, cholera, and yellow fever; anæsthesia; acute nephritis; acute poisoning with phosphorus, lead, or turpentine; acute yellow atrophy of the liver; eclampsia; convulsions; hysteria; hepatic cirrhosis; fevers; cachectic states; chilling of the skin surface; large ascitic accumulation; pressure upon the vena cava by tumors; acute cardiac dropsy; digitalis in toxic doses; blackwater or hæmoglobinuric fever; chronic parenchymatous nephritis; profuse sweating, vomiting, diarrhœa, or hemorrhage; scant water drinking.

In the new-born the causes are: malformation of the genital tract, or, usually, uric acid infarctions in the renal tubules, or unknown causes. The newly born baby may normally not pass urine for twenty-four hours.

Osler says: "A patient may live for from ten days to two weeks with complete suppression of urine."

Treatment.—Obstructive cases require surgical intervention. Gaston Lyon advises, in calculous anuria, prolonged hot baths, electricity, and a milk diet; and, if uræmia appears, or the anuria is not relieved before the fifth day, nephrostomy.

In non-obstructive cases employ hot applications and cupping over the kidneys, hot colonic irrigation with normal saline solution (a teaspoonful to the pint), or irrigations by means of Kemp's double current rectal tubes, free sweating with hot air and perhaps pilocarpine, gr. $\frac{1}{8}$, hypodermically, and free purging. A dry cup is applied as follows: a tumbler is swabbed quickly with alcohol, the edges wiped dry, the alcohol ignited and allowed to burn for a few moments, and the cup then quickly applied. Diuretics are not advised. The treatment of acidosis (*q.v.*) may reëstablish diuresis.

Intravenous (*q.v.*) or subcutaneous infusions of sterile normal saline solution are indicated in collapse.

In the newly born one may prescribe the following:

℞ Spiritus ætheris nitrosi... ♏viii (♏i per dose)
Potassii citratis vel acetatis..... gr. viii (gr. i per dose)
Aquæ..... ℥i
M. Sig.—One dram every hour or two, together with plenty of water, until the urinary secretion is established. (Holt.)

In uric acid infarction, the uric acid, when washed out, appears as reddish stains.

Anus.—See Anal.

Aortitis.—See Arteriosclerosis and Arteritis.

Aphasia.—Gr. α priv. + φάσις speech. See under Brain Localization.

Aphonia.—See Throat Diseases, Part 9.

Aphthæ.—See Stomatitis, Aphthous.

Bednar's.—See Ulcer of the Mouth.

Apoplexy.—Gr. ἀποπληξία. Apoplexy denotes a more or less sudden loss or dis-

LAROUSSE MÉDICAL

Aperient, astringent, laxative and refreshing plants.

turbance of consciousness associated with a flaccid paralysis, due to cerebral hemorrhage, embolism, or thrombosis. A differential diagnosis between hemorrhage, embolism, and thrombosis can never be certain, therefore I have included all three under the designation Apoplexy, for therapeutic reasons.

Causes of Cerebral Hemorrhage.—Arteriosclerosis (*q.v.*), rupture of a miliary aneurysm, trauma, vascular tumor, sudden muscular or mental stress, whooping-cough, general paresis, sudden arrest of menstruation, pregnancy and the puerperal state, obesity, chronic nephritis, infectious diseases, leukæmia, pernicious anæmia, purpura.

Causes of Cerebral Embolism.—Endocarditis, septico-pyemia, atheroma, piece of clot from the auricular appendix or from an aneurysmal sac.

Causes of Cerebral Thrombosis.—Syphilis, infectious diseases, atheroma, abnormal blood states—*e.g.*, anæmia, chlorosis, leukæmia, pregnancy, and diabetes—obstruction to the flow of blood by tumors, gumma or abscess, ligation of the carotid artery, very rarely cardiac or general circulatory enfeeblement.

For other causes of unconsciousness, see Coma.

Prognosis.—Most apoplectic attacks are recovered from, but the ultimate outlook in elderly patients is serious.

Treatment.—With great gentleness, place the patient in bed, in a quiet, darkened room, with the head slightly raised without bending the neck, and the body turned upon its side to avoid falling back of the tongue. See that the clothing is loose. Place an ice-cap to the head, and hot bottles covered with flannel near the feet. If the arterial tension is high (cerebral hemorrhage), purge the patient actively by means of croton oil, gtt. i–ii, in four or five drops of glycerine, olive oil, or butter, placed upon the back of the tongue, or elaterium, gr. $\frac{1}{12}$ to $\frac{1}{2}$, or elaterin, gr. $\frac{1}{20}$–$\frac{1}{10}$, or calomel, gr. v–x, aided by an enema consisting of oil of turpentine, ℥ss–i–iv, and olive oil, in a large amount of warm soapsuds.

For restlessness administer sodium bromide, gr. xxx, well diluted, every 4–6 hours.

For sleeplessness administer trional, gr. xv.

For convulsions administer chloroform by inhalation, and hyoscin, gr. $\frac{1}{100}$, hypodermically, or chloral, gr. xx, with sodium bromide, gr. xxx, well diluted, per rectum.

For feeble heart action administer, when necessary, camphor, gr. ii, in olive oil, ♏xxx, hypodermically; or ether, ♏xxx–lx, hypodermically; or caffein, gr. iss to iii, dissolved in sterile water by the addition of benzoate or salicylate of sodium, gr. iv–x.

For hiccough, retching, and vomiting, administer morphine, gr. $\frac{1}{6}$, with atropine, gr. $\frac{1}{120}$, hypodermically.

When no positive diagnosis between hemorrhage, embolism, and thrombosis can be made, blood-letting is perhaps inadvisable, since it favors clotting. Cushing says it is "unphysiological and hazardous." Good authorities, however, advise the withdrawal of 8–16 ounces of blood, when the face is congested, the pulse full and hard, and the second aortic sound accentuated. Small doses of aconite (see Part 11) are recommended for the same purpose.

Cushing advocates simple decompression or removal of the clot in those cases in which the blood pressure and temperature continue to rise and Cheyne-Stokes respiration occurs, or in which the blood-pressure is 250 (Riva-Rocci) and the pulse as low as 50 per minute.

If syphilitic thrombosis is suspected, administer mercury by injection or inunction, and add potassium iodide, gr. xx–xxx + t.i.d., as soon as the patient can swallow (see Syphilis).

Feed the patient only per rectum (see Rectal Feeding), until he is able to swallow, then feed him with a spoon—milk, eggs, and broth, every three or four hours. Keep the mouth clean with an alkaline antiseptic solution (see Pyorrhœa Alveolaris), using for the purpose a cotton or gauze swab attached to hæmostatic forceps. Bathe the body daily with tepid water and alcohol, and guard against bed-sores (*q.v.*). Relieve urinary retention with the catheter.

Keep the patient in bed for at least two weeks after recovery from the stroke. At least ten days after recovery, begin to treat the paralyzed muscles by means of massage toward the heart, for no longer than fifteen minutes, once or twice daily, and passive movements. "After the lapse of a fortnight, or, in severe cases, a month" (Osler), employ the faradic current for a half-hour, alternately with massage, of a strength not sufficient to cause pain or muscular contraction. To keep the shoulder from sagging, support the arm at the elbow. No further improvement can be expected in the paralysis after it has persisted over three months. If contractures begin to develop, see that the limbs are placed in convenient positions. Tendon and even nerve transplantations may be of service in alleviating the effects of residual paralyses.

Prophylaxis.—This is the same as the treatment of arteriosclerosis (*q.v.*), viz., moderate exercise, the avoidance of excessive physical or mental work and of sexual intercourse, free bowel action, a bland, light diet, and the avoidance of tea, coffee, alcohol, and tobacco. Should such premonitory symptoms of hemorrhage as vertigo, paræsthesia, muscular twitching, etc., occur, the patient should keep very quiet, open his bowels, restrict his diet, and take about fifteen grains of sodium bromide every four hours. (Forchheimer).

Appendicitis.—The characteristic symptoms of appendicitis are: sudden pain with nausea and vomiting, elevation of temperature and rapid pulse, usually constipation, sometimes diarrhœa, some flexion of the right thigh, tenderness and muscle spasm in the right iliac region, pain on turning on the left side, and sometimes tumor. Recurrent attacks are common.

Other conditions that may sometimes simulate the commoner appendicitis are: menstrual pain, tubo-ovarian disease, pelvic peritonitis, biliary colic, renal colic, Dietl's crises in floating kidney, perinephric abscess, psoas abscess, early spinal caries, sacro-iliac disease, pleurisy, typhoid fever, mucous colitis with enteralgia, acute hemorrhagic pancreatitis, intussusception in infants, acute indigestion, hysteria.

Treatment.—Most cases of acute appendicitis recover without operation, but subsequent attacks are prone to occur. All cases seen within the first thirty-six to forty-eight hours of an attack should be operated upon at once, unless adventitious contraindications exist. Operation in these early hours is very safe. But if the case is seen, while still progressing, after the first forty-eight hours, what should be done? This is a perplexing problem. The inflammatory processes are at their height, the defensive forces of the body have not yet gained the ascendancy, and premature surgical interference may be a detriment instead of a help. Many surgeons operate at once at whatever time the case is seen; others are inclined to employ the following plan of Ochsner's: absolute rest in bed, with the head and chest elevated, and a pillow under the knee, and strict injunction against turning over or sitting up (the patient should be lifted on the bed-pan when the latter is used, and should be warned against exertion); the withdrawal of all food and water, for the purpose of preventing peristalsis; the administration of an enema consisting of two ounces of olive oil; the mouth kept clean and moist; warm or cold applications to the affected region (50 per cent. alcohol compresses, changed every twelve hours, are strongly recommended by Ortner); for vomiting, warm applications to the epigastrium, gastric lavage, or some one of the remedies enumerated under Vomiting; for excessive thirst, small pieces of ice to suck, or, better, proctoclysis, with the metal reservoir elevated only about six or seven inches above the buttocks, no tube clamps being used, and the water or saline solution (℥i ad Oi) being kept warm (115° F.) by means of hot water bottles immersed in the metal reservoir. If progressive improvement does not follow this line of treatment, operate. The result of this rest treatment usually is rapid localization of the inflammatory processes, and either entire resolution or local abscess formation. Operation with drainage at this stage is very safe. After 48 hours of the above treatment, provided that all symptoms have subsided, return cautiously to a liquid diet, *e.g.*, milk, one to two tablespoonfuls every 2–3 hours, or broth with an egg stirred in it, or strained barley gruel; later, well-cooked cereals, such as sago, tapioca, arrowroot, wheat, or oatmeal, with a gradual return, after seven to ten days, to soft-boiled eggs, mashed potatoes, vegetable purées, finely chopped sweetbreads, chicken, or mutton, etc. After the symptoms have disappeared, give calomel (see Part 11). Absolute rest should be continued for at least five to ten days after the symptoms have disappeared.

Should fever, nausea, or local symptoms return, operate at once.

When operation is performed at the height of an attack, remove the appendix only if it is accessible and easily amputated, and the constitutional intoxication is not severe, but remove it if at all feasible. Do not invaginate the stump. Irrigation, sponging, and manipulation of the tissues should be strictly avoided. It may be best merely to open any existing abscess and insert a large split drainage tube with many side openings at its lower end, especially where the intoxication is great. The abdomen should be opened medianward and the intestines cofferdammed before incising the abscess.

Should fever and pain recur after the evacuation of the abscess, make hot applications in order to promote freer drainage. Give enemas whenever required for distressing distention.

To remove the risk of operation between about the fifth to tenth day, when the contents of the abscess are apt to be extremely virulent, Page advocates a conservative

operation: "If on opening the abdomen the abscess is found not to be shut off from the general peritoneal cavity, no attempt is made to open the cavity or do anything further; a cigaret drain of medium size is put down to the outer side of the inflammatory mass and the wound sutured. Hot abdominal fomentations are then applied. Spontaneous discharge of the abscess occasionally occurs along the tube; in a surprising number of cases, however, the inflammatory swelling subsides without any pus appearing. If the temperature keeps up and the pain persists after the second or third day, the tube is removed and a finger inserted along its track under gas, and in this way the abscess can usually be broken into. At this stage adhesions around the line of the drainage tube remove the risk of infecting the peritoneum." (*The Practical Medicine Series of 1915.*)

After operation for general peritonitis following perforative appendicitis, place the patient in a semi-sitting posture (Fowler's position), and administer hot normal saline solution (℥i of NaCl ad Oi) containing calcium chloride, ℥i to each pint, or just plain water, per rectum. Keep the rectal tube constantly in place, and give 6–15 quarts during each twenty-four hours, or 1½ pints every two hours. Continue this for three or four or more days. Give no water by mouth. Eight hours after the operation promote a mild catharsis by means of small doses of calomel, or give an enema as often as is necessary to correct distention and distress.

In performing proctoclysis employ a metal fountain syringe and a rectal tube with many openings, bent at an obtuse angle two inches from its tip, so that it can be fastened to the thighs with adhesive strips. Suspend the can so that its base is six inches above the level of the buttocks. Keep the solution at a temperature of 100° by means of hot water bags, thermolytes, an incasing can of hot water, or hot water bottles immersed in the reservoir. Do not employ clamps or knots in the tube to control the flow. The multiple openings are intended "to provide for a sudden return of the flow into the can when the patient strains, wishes to expel the fluid, or void gas." "It should require not less than forty nor more than sixty minutes for the pint and a half of solution to percolate into the bowel, being uniformly absorbed in this period of time; but if administered more rapidly, it will be expelled." (John B. Murphy.)

Appendectomy Operation.—Make a longitudinal incision, about two inches in length, just to the median side of the semilunar line, and bisected by a line drawn from the anterior superior spine of the ilium to the umbilicus.

Incise the skin and two layers of aponeurosis and thus expose the rectus muscle. Loosen the latter in its sheath, and retract it toward the middle line. Divide the posterior sheath and peritoneum transversely, bearing in mind the proximity of the deep epigastric artery.

Hook up the meso-ilium into the wound, and follow and free the appendix from its base to its tip.

Clamp the mesentery of the appendix about half an inch from its appendiceal margin with compression forceps; place a catgut ligature in the groove; and divide the mesentery close to the appendix up to the caput coli with scissors.

Clamp the appendix one-half an inch from the caput coli; place a catgut ligature in the groove; and amputate the appendix one-eighth of an inch distal to the ligature.

If adhesions cannot be separated with safety, divide the peritoneal and fibrous coats of the appendix from base to tip, shell out the mucosa, close with a whipstitch of catgut, and amputate the appendix. Ligate the mesentery as before, if it can be freed. (Partly from Keen's Surgery.)

Appetite, Excessive.—See Bulimia.

Loss of.—See Anorexia.

Apraxia.—Gr. *a* neg. + *πράσσειν* to do. Apraxia or dyspraxia (Gr. *δυς* ill) signifies the inability to perform certain voluntary movements, although there exists no motor or sensory paralysis or ataxia. The cause is usually a lesion of the corpus callosum or posterior part of the frontal lobe.

The treatment consists in the retraining of the limb for such acts as are lost or defective. (S. A. Kinnier Wilson.)

Aptyalism; Hypoptyalism; Xerostomia.—Gr. *a* priv. + *πτυαλίζειν* to spit; *ὑπό* under; *ξηρός* dry + *στόμα* mouth.

Causes of Dry Mouth.—Fevers; fright and excitement; neurasthenia; tumor of the temporal lobe; convalescence from typhoid fever; atrophy of the salivary glands, as after mumps; arteriosclerosis; polyuria (*q.v.*); atropine; diarrhœa; occurrence of ascites.

Treatment.—Consider the cause. Employ a glycerine or albolene spray, or a mouth-wash containing lemon juice, *e.g.* glycerine and peppermint water, āā℥i, to which is added the juice of a lemon. Pilocarpine may be employed; five drops of a 2½ per cent. solution (gr. ⅛), by mouth, two or three times daily, gradually increased by

one drop at a time, until a moderate increase of perspiration and saliva follows each dose. Warn the patient to avoid draughts for one and a half hours after each dose. The drug may be continued for a long time if desired. Faradism may be applied to the salivary glands.

Arm Pain.—See Pain.

Arrhythmia, Cardiac.—Gr. *a* priv. + *ῥυθμός* rhythm; *καρδία* heart.

1. *Extrasystoles or Premature Beats.*—This is probably a harmless form of arrhythmia due to excessive irritability of the heart resulting from some toxic action. It is revealed in the arteriogram by the occurrence of a weak premature beat followed by a compensatory pause, and this in turn by an unusually strong beat. On auscultation the second sound is often absent, the first sound alone being heard. These extrasystoles usually originate in the ventricle; less often in the auricle.

Fig. 3.—Arteriogram showing extrasystoles.

Says Thomas Lewis, quoted by R. C. Cabot: "The mechanism of the heart may be identified in the majority of cases in which it is irregular by a careful examination of the radial pulse-tracing alone."

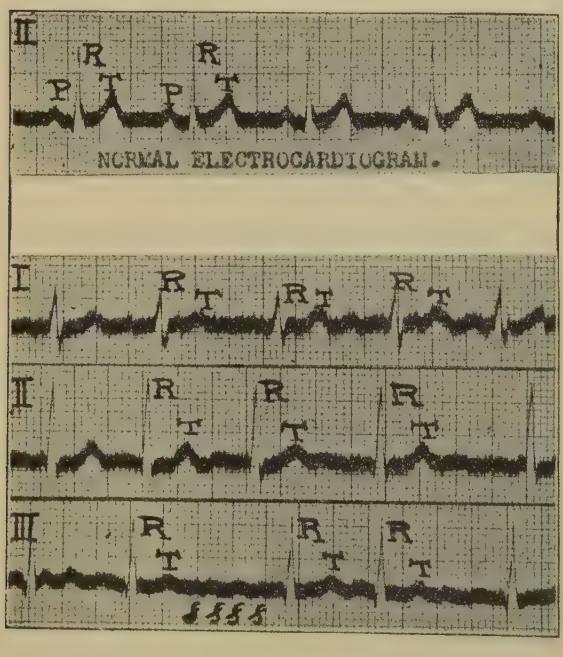


Fig. 4.—Electrocardiogram in Auricular Fibrillation. The P wave, the representative of auricular contraction, is absent in all three leads. Fine fibrillary (f) waves fill diastole in Lead III. Note the absolute irregularity of ventricular contraction, as expressed in the uneven spacing of the R wave. Courtesy *Practical Medicine Series.*

The electrocardiogram is a magnified photographic tracing of the oscillations of a fine, gold-covered, quartz string galvanometer placed between the poles of a powerful electric magnet and connected with three finely spun German silver wire leads applied to the surface of the body, through which leads the galvanometer receives the action currents of the heart. The leads are applied to each forearm and to the left leg, forming a triangle, lead I constituting the base, lead II the right side, and lead III the left side. The electrodes are curved to fit the limb, and held in place with bandages soaked in hot solution, and insulated wires carry the current to the string galvanometer. The string in its oscillations registers the electric potential of the heart in the form of a curve (figures 5 and 6). Lead II registers the greatest value of the heart's contraction-waves, because it is more nearly parallel with the electric axis of the heart, and thus reflects more of the heart's surface.

The vertical unit of measurement in the electrocardiogram represents 104 millivolts; the horizontal unit, 0.04 seconds.

The "P" wave represents auricular contraction; Q, R, S, T represent the ventricular complex. The "P" wave is a "small blunt-pointed or rounded elevation, not normally over 2 mm. high, nor over 0.02 sec. wide, and is directed upward." "The time taken for the passage of the impulse from auricle to ventricle is called the 'P, R' interval; it is measured from where P leaves the base line to where R begins, and normally occupies from 0.12 to 0.18 second; over 0.2 second indicates a delay in conduction." "The 'P, R' interval is the expression of the conductivity of the bundle of His." "The Q, R, S, T denote ventricular contraction." "Q is the first evidence of activity at the apex of the ventricle; it is directed downward, usually not over 2 mm., and may be entirely lacking, being submerged by stronger contraction waves." "The R wave is due to the action of the basal portions of both ventricles; it is directed sharply upward in all three leads, and in lead II registers its greatest normal amplitude of from 10 to 20 mm. (normally, the values of all waves of lead II equal the combined values of leads I and III)." "The first sound of the heart begins as R approaches the zenith." "The S wave is a sharp peak directed downward 5 or 6 mm., and is due to activity at the apical portions of the

ventricles; it, too, may also be lacking, also less often than Q." "The slowly rising T wave represents the final activity of the ventricle, and has its origin, it is believed, at the basal portion of the ventricles, nearer the great vessels." "T, as will be noticed,

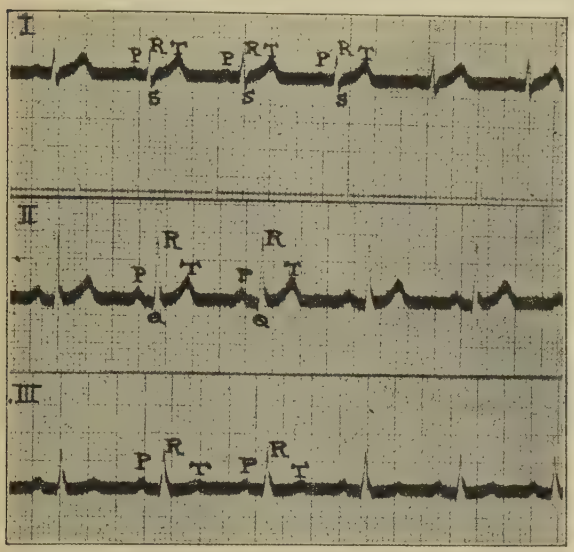


Fig. 5.—Normal Electrocardiogram. P represents auricular contraction. Q, R, S, T represent the ventricular complex. Courtesy *Practical Medicine Series*.

returns to the base line much more sharply than it left it." "It is normally directed upward ('positive') in all three leads, although it may occasionally be directed downward ('negative') in lead III, in which lead it is often quite small." "Exercise increases the size of the T wave; the second heart-sound occurs synchronously with the end of T." "From T to P is the diastolic period of the heart." (S. Calvin Smith.)

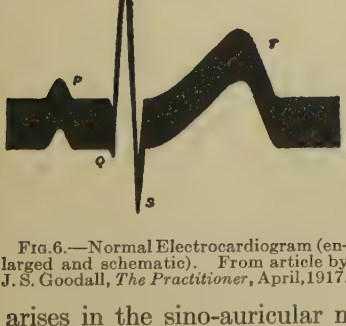


Fig. 6.—Normal Electrocardiogram (enlarged and schematic). From article by J. S. Goodall, *The Practitioner*, April, 1917.

The impulse of contraction arises in the sino-auricular node, called the "pace-maker," located at the junction of the superior vena cava with the right auricle, whence it spreads through the bundle of Flack to the node of Tawara, located in the right auriculoventricular septum, thence to the bundle of His, one branch of which passes to the right ventricle and the other to the left ventricle through the interventricular septum, the terminal arborizations of these branches, called the "fibres of Purkinje," spreading out in all directions in the ventricular muscle.

The electrocardiograph shows which side of the heart is working most (called preponderance right or left). A small R and large S in the first lead with a large R and small or absent S in the third lead indicates preponderance right, which obtains in mitral disease and usually in congenital heart disease. A large R and small or absent S in the first lead with a small R and large S in the third lead indicates left preponderance, which obtains in aortic disease, syphilitic aortitis, aneurysm, renal disease or vascular hypertension.

2. *Auricular Fibrillation*—This is a state of myocardial insufficiency in which the auricle is distended and fibrillating, *i.e.*, "the seat of innumerable, incoördinate contractions," which project along the bundle of His a "rapid and haphazard succession of waves" into the ventricle, which consequently beats absolutely irregularly (delirium cordis). The condition is ordinarily diagnosed by the absolutely irregular pulse. In the polygraphic tracing of the jugular vein, the A wave is absent, owing to the absence of auricular contraction, and is perhaps replaced by multiple undulations. In mitral stenosis the presystolic bruit disappears on the onset of auricular fibrillation.

The arrhythmia of the failing or uncompensated heart is practically always due to auricular fibrillation. The latter may occur in any form of heart disease, in poisoning with digitalis, caffeine, and chloroform, and in sudden interruption of the coronary circulation.

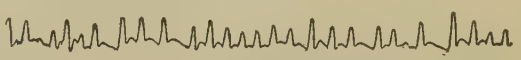


Fig. 7.—Arteriogram in auricular fibrillation (R. C. Cabot).

3. *Auricular Flutter.*—A condition in which there occur very rapid (above 200 per minute), but regular, auricular contractions, with consequently a rapid ventricular rate, which, however, is slower than the auricular rate (usually one-half), due to heart-block. The condition is due to excessive stimulation of the auricle.

Says R. C. Cabot: "We now know, through electrocardiographic investigations, that while in the vast majority of these tachycardias the cardiac impulse comes down from the auricle in the ordinary way, it does not arise at the ordinary place, *i.e.*, at the pace-maker (sino-auricular node), but starts up like an insurrection at some other point in the auricular muscle ('heterogeneous impulses'). Rarely does such a tachycardia

originate in the ventricle or in the bundle of His."

4. *Heart-Block.*—A condition in which (*a*) the interval between auricular systole and ventricular systole is prolonged; or (*b*), in more advanced cases, the ventricle occasionally drops a beat, or is "silent" following an auricular systole; or (*c*) "dropped beats" recur regularly; or (*d*) the ventricle beats each time only after two or more auricular beats; or (*e*) no impulses at all pass down from the auricle to the ventricle, and the latter either stops altogether, or establishes a slow rhythm of its own ("approximately 32 per minute"). "If the ventricular silence lasts three to five seconds the patient usually loses consciousness for a moment. Silence of ten to twenty seconds usually results in epileptiform convulsions. When these cerebral phenomena are associated with more or less heart-block, we have the Stokes-Adams syndrome (*q.v.*). Silence over ninety seconds means death." (R. C. Cabot, quoting Thomas Lewis.)

Fig. 8.—Arteriogram in paroxysmal tachycardia (R. C. Cabot.)

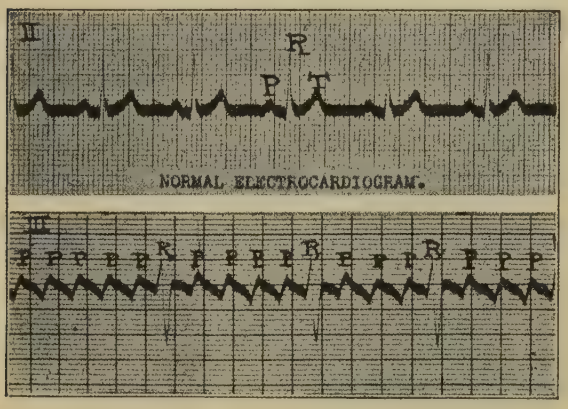


Fig. 9.—Auricular Flutter. The auricles are contracting at an average rate of 270 times per minute. The ventricular rate averages 60 times per minute. The impossibility of arriving at a clinical diagnosis under such circumstances is quite apparent. Graphic records such as this, however, clearly establish the diagnosis and thus point the way to efficient treatment. Courtesy *Practical Medicine Series.*

The polygraph and the electrocardiograph give accurate information. Sometimes more than two pulsations may be counted in the external jugular vein to one in the arteries, or the auricular contractions may be heard near the left sternal margin like the ticking of a watch. The fluoroscope may show the auricles and ventricles contracting independently.

The cause of heart-block is impaired conductivity in the auriculo-ventricular conducting bundle of His, due to a variety of factors (gumma, calcification, fibrosis, neoplasms, infarction, simple round-celled infiltration, ulceration, fatty degeneration, sclerosis of the nutritive artery, acute infections, asphyxia, acute gastro-intestinal disturbance, poisoning with digitalis, strophanthus, aconite, etc.).

Heart-block is usually accompanied by bradycardia, but it may also be present in an extremely rapid heart, as in auricular flutter. The latter may also be associated with syncopal attacks, due to cerebral anæmia (see Stokes-Adams syndrome).

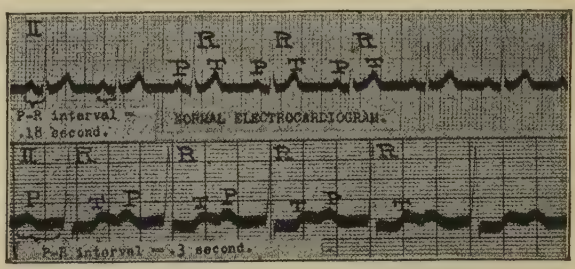


Fig. 10.—Delayed Conduction. The impulse for contraction is transmitted from the auricle to the ventricle over the node of Tawara and the bundle of His. In the normal heart this transmission occupies 0.18 second. In the lower figure conduction is delayed to 0.3 second. Delayed conduction may often be the forerunner of eventual heart-block; hence, such patients require frequent graphic study and appropriate treatment. Courtesy *Practical Medicine Series.*

5. *Coupling of the Ventricular Beats,* or the occurrence of beats in "close-knit pairs with pauses of varying lengths between the pairs," occurs often in auricular fibrillation following the administration of digitalis. (R. C. Cabot.)

6. *Pulsus Alternans* is revealed by the radial arteriogram, which shows a regular alternation of strong and weak beats, with or without a disturbance of rhythm. When constant it is a sign of great myocardial exhaustion.

7. *Sinus Arrhythmia.*—An irregularity in the discharge of stimuli from the sinoauricular node, caused normally by the respiratory movements, and manifested by rapid action of the heart at the beginning of inspiration, and a much slower action for several beats during expiration. It is of no significance.

Palpitation is "irregular or forcible action of the heart, perceptible to the individual" (Osler); it is usually produced by extrasystoles. It is considered in its alphabetical order; as are also tachycardia and bradycardia.

Some of the Causes of Arrhythmia.—Neurasthenia; hysteria; hypochondriasis; prolonged severe mental distress; traumatic neurosis; nervousness in children; debility; toxic agents, *e.g.*, coffee, tea, tobacco, digitalis, belladonna, aconite, opium, lead, alcohol, intestinal poisons, metabolic poisons, as in exophthalmic goitre, gout, and kidney disease; infectious diseases; high blood-pressure; flatulent dyspepsia; overfull stomach; change in posture; overstrain due to overexertion, intense emotion, sexual excess (see Heart Strain); organic heart disease, valvular or myocardial; thoracic, abdominal, or pelvic disorders (uterine cervical polyp, etc.) giving rise to reflex sympathetic irritation; cardiac syphilis; arteriosclerosis; anæmia; chorea; migraine; organic central nervous disease; vomiting from any cause, producing reflex vagus irritation; pain.

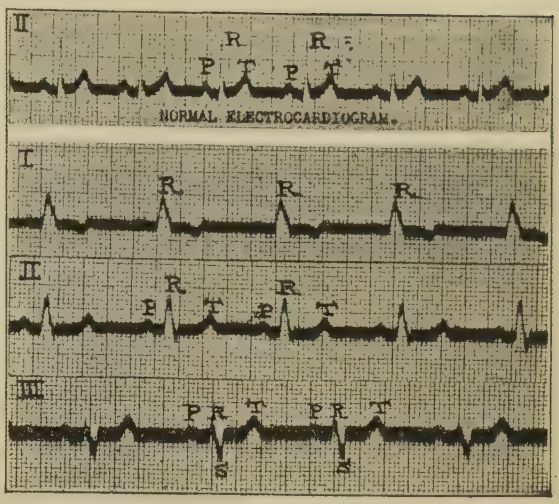


FIG. 12.—Right Bundle Branch-Block. The time which elapses from the point where R leaves the base line in Lead I until it returns to the base line, plus the width of the R–S deflection in Lead III are the characteristics of block in the right branch of the bundle of His. *Practical Medicine Series.*

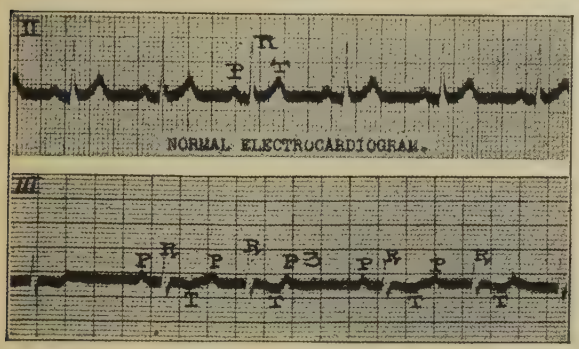


FIG. 11.—Dropped Beat. In the second curve it will be noticed that P-3 is not followed by a ventricular contraction. Dropped beat is in reality a low-grade heart-block, not to be confused with ventricular premature contractions which fail to reach the wrist. Courtesy *Practical Medicine Series.*

Treatment.—Search for and remove the cause, if possible. Treat palpitation (*q.v.*) if present; also heart strain (*q.v.*).

Persistent tachycardia due to auricular flutter or auricular fibrillation, calls specifically for digitalis (*q.v.* in Part 11). Digitalis impedes conduction in the bundle of His. In cases, however, of cardiosclerosis, with marked myocardial degeneration, and in fever, the action of digitalis, whether auricular fibrillation is present or not, is not marked. Digitalis is contraindicated, as a rule, says Billings, when auricular fibrillation is associated with mitral stenosis. After the pulse has been slowed to normal, it

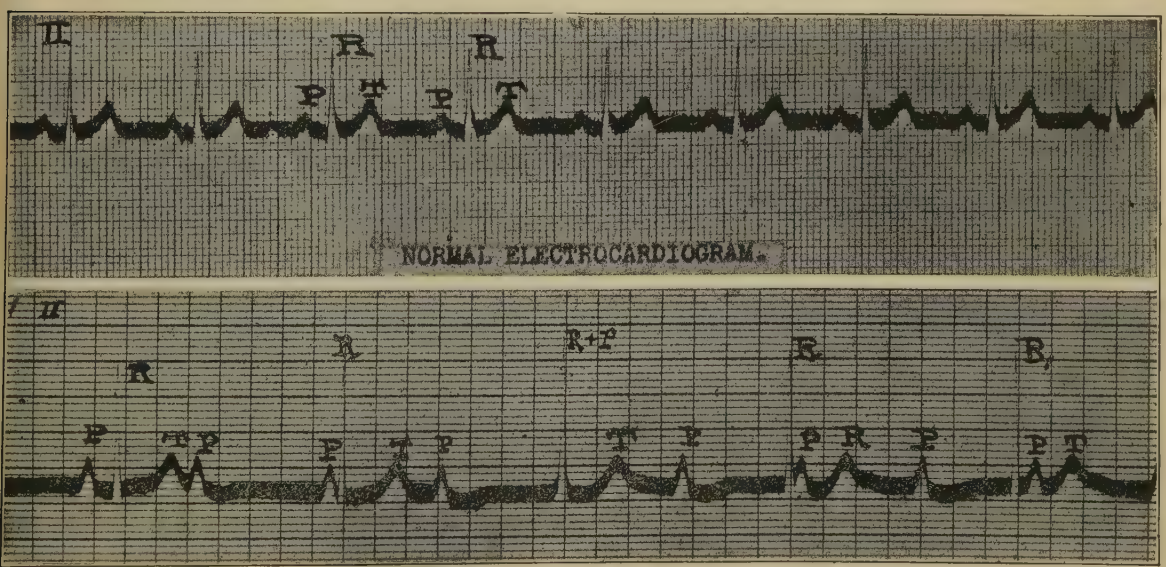


FIG. 13.—High-Grade Heart-Block. There is complete dissociation of the auricles and ventricles, each contracting regularly, while absolutely independent of the other. The auricular rate is 90, the ventricular 50 per minute. Courtesy *Practical Medicine Series.*

may be necessary to continue the digitalis in smaller but sufficient doses indefinitely.

W. M. Barton states that caffeine tends to counteract digitalis arrhythmias.

For paroxysmal tachycardia the following measures are recommended: Inversion,

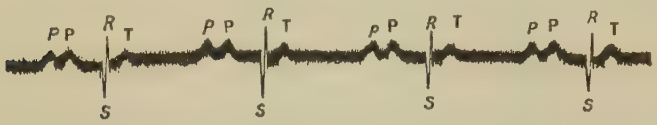


Fig. 14.—Auriculo-Ventricular Heart-Block (Stokes-Adams' disease). Note that the auricles beat twice to the ventricles once. From article by J. S. Goodall in *The Practitioner*, April, 1917.

which drains the splanchnic region and stimulates the vagus centres; the drinking of ice-water or strong coffee; compression of the abdomen with a tight towel; with the head low, taking a deep breath, closing the glottis,

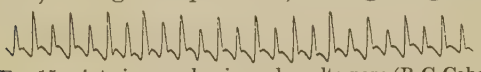


Fig. 15.—Arteriogram showing pulsus alternans (R. C. Cabot).

and making a strong expiratory effort; compression of the vagus just to the left of the thyroid cartilage; galvanic stimulation of the vagus; stimulation of the vagus centres by spraying the nape of the neck with ether or ethyl chloride; ice-bag to the precordium; spray of ether or ethyl chloride over the heart; the production of belching, facilitated by sitting down, filling the mouth with water, bending the head back as far as possible, and swallowing; tincture of aconite, 1–3 drops, in water, every one to three hours; a nerve sedative: bromide or morphine (see also Tachycardia).

The treatment of pulsus alternans is rest, both mental and physical. Digitalis is contraindicated.

Arsenical Poisoning.—I. *Acute Poisoning.* See Poisoning.

II. *Chronic Poisoning.*—Chronic arsenical poisoning may be caused by medicines, wall-paper, and other colored papers, carpets, fabrics, furs, rugs, paint, crayons, beer.

It is characterized by puffiness of the eyelids, nausea, vomiting, diarrhœa, salivation, flushing of the skin, herpes, paræsthesiæ and pains, pigmentation, keratosis, and polyneuritis. The prognosis is usually good.

Treatment.—Remove the cause. Administer potassium iodide (*q.v.* in Part 11), gr. v, well diluted, after meals, as an eliminant. For pain, employ hot applications and hot baths; protect the skin from the pressure of the bed-clothes by means of supporting cradles, and prescribe phenacetin or morphine if necessary (no alcohol). Treat paralysis as described under Neuritis, Multiple.

Arterial Thrombosis.—See Gangrene of the Skin.

Arteriosclerosis.—Gr. *ἀρτηρία* artery + *σκληρός* hard. The characteristic signs of arteriosclerosis are: increased blood-pressure (the normal is 120–160 mm. of mercury; it becomes normally higher as one grows older; a maximum pressure of over 160 mm. in one over forty is moderately

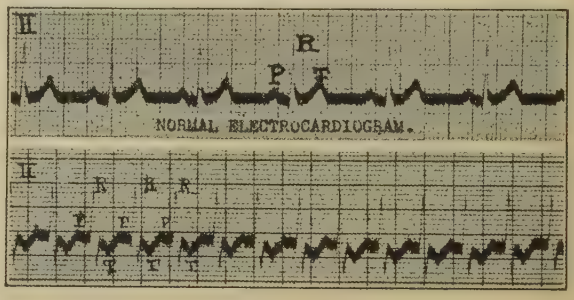


Fig. 17.—Paroxysmal Tachycardia. The ventricles respond to each auricular impulse, both chambers contracting at the rate of 210 per minute. Courtesy *Practical Medicine Series.*

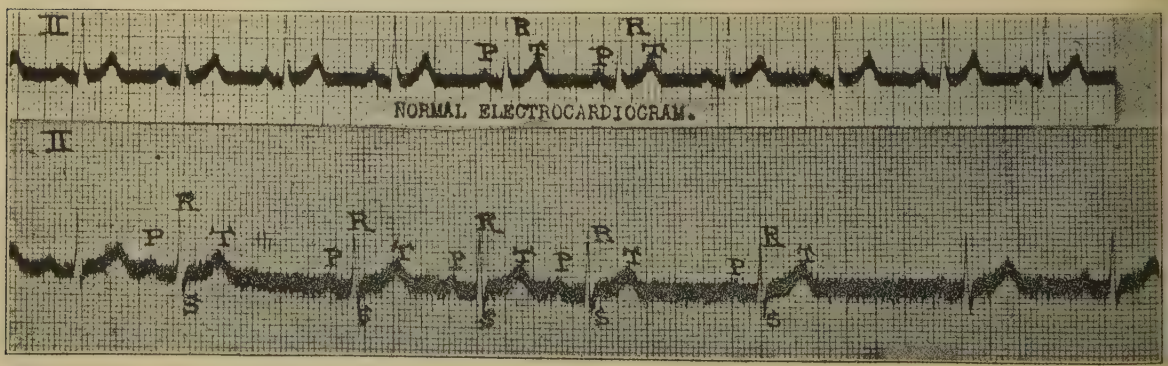


Fig. 16.—Sinus Arrhythmia. This curve strikingly illustrates the variations in rate which characterize the "youthful type" of cardiac irregularity. The sequence of events is a normal P-R-S-T complex, but the rate varies with each contraction. Courtesy *Practical Medicine Series.*

high), hypertrophy of the left ventricle, a ringing second aortic sound, and palpably thickened and tortuous arteries. Calcified plaques occurring along the course of the deep vessels are revealed by the X-ray (*q.v.*).

The facies may be pallid, but is oftener florid. There occurs a gradual diminution of the physical and mental powers.

In cerebral arteriosclerosis, the obliteration or rupture of the capillary vessels gives rise to impairment of the blood supply and focal areas of necrosis, with resulting neurasthenia, perhaps headache, relieved by reducing the blood-pressure, dizziness or vertigo, insomnia, apoplectic or apoplectiform attacks with transitory or permanent paralyses or aphasia, due to spasm or obliteration or rupture of a vessel, convulsions, mental failure, and perhaps Stokes-Adams syndrome (*q.v.*). The condition of the retinal vessels (uneven calibre and tortuousness, pallid arteries, white stripes in the vessel walls, gray opacity around the optic disc indicating œdema, hemorrhages) is an important aid in the diagnosis of cerebral arteriosclerosis.

Muscle cramps, neuritic pains, erythromelalgia, intermittent claudication, coldness and gangrene are evidences of sclerosis of the arteries of the lower extremities.

Angina pectoris, paroxysmal dyspnœa, paroxysmal tachycardia, and Stokes-Adams syndrome are possible cardiac manifestations.

Dilatation of the heart may occur. Dyspeptic symptoms may be present. Slight albuminuria is common. Aneurysm is a possible sequel.

Etiology.—Advancing age, aided by the "wear and tear of life" (Osler); persistent physical or mental stress and strain; habitual overeating; heredity; syphilis; the acute infectious diseases; chronic intoxications, *e.g.*, lead, tea (?), coffee (?), alcohol (?), tobacco (?), adrenalin (?); gout, rheumatism, chronic nephritis, diabetes, obesity.

Treatment.—Enjoin a quiet life, regular moderate exercise in the open air, a daily warm full bath, regulation of the bowels, and a plain, bland, light diet—milk, buttermilk, eggs boiled three minutes, bread and butter, vegetables, fruit, fish, oysters, meat sparingly, at the most only once a day, best boiled to remove the extractives. Proteids, salt, and fluids should be restricted. Forbid alcohol, tea, and coffee, and forbid, or enjoin moderation in, smoking. Manual or vibratory massage is beneficial. A periodic calomel purge, gr. iii–vii, is helpful.

℞ Sodii vel potassii iodidi ʒi (gr. iii–v–x per dose)
Aquæ destillatæ, q.s. ad. ʒi
M. Sig.—Drops 3–5–10 t.i.d.p.c., well diluted in milk, to which may be added about a quarter of a teaspoonful, or gr. v–x, of sodium or potassium bicarbonate.

Give the iodide continuously for years, with about ten days' intermission each month. For the symptoms of iodism see Part 11. The iodides reduce the blood-pressure, and act as an eliminant. They relieve neurasthenia, angina, dyspnœa and cardiac asthma. Sajodin and iodipin (see Part 11) are less likely to produce gastric and cutaneous disturbances than the iodide.

Klemperer gives arsenic (*q.v.*) alternately with iodides; he says it relieves headache, dizziness, sensations of fear, and subjective cardiac symptoms, and reduces blood-pressure.

For very high blood-tension and its accompanying uncomfortable symptoms, the nitrites may be employed:

℞ Spiritus glonoini (1 per cent. alcoholic solution of nitroglycerin)..... ʒss
Sig.—Drops 1–3–5 in water, three or four times a day, beginning with one drop and increasing by one drop at a time, until the tension is lowered, or flushing, headache, palpitation, or buzzing in the ears occurs.

℞ Sodii nitritis..... (gr. i–ii, up to iv, per dose)
Sodii bicarbonatis
Potassii nitratis...āā gr. xxxii
Aquæ destillatæ, q.s. ad ʒii
M. Sig.—ʒss–i, up to ʒii, in water, every three or four hours, as required.

℞ Erythrolis tetranitratis gr. ½
Mitte talis tabellæ No. 100.
Sig.—One tablet every 3–4–6 hours, gradually increased to four or nine tablets, or until flushing, throbbing, or slight transient faintness are experienced. Intermit the drug for several days every two weeks.

The effect of nitroglycerin lasts about twenty minutes; of sodium nitrite, about thirty minutes; of erythrol tetranitrate, three to four hours.

Ergot (*q.v.* in Part 11) is recommended for vertigo due to vasomotor instability.

Arteriosclerotic Kidney.—See Bright's Disease.

Arteritis.—Acute arteritis occurs very rarely as a primary affection in the course of the acute infectious diseases, particularly typhoid fever. It is oftener caused by an infected embolus, or an infected marantic thrombus, or by the extension of an inflammatory process from without.

Syphilis is a familiar cause of arteritis, which, in the aorta, may eventuate in aortic regurgitation or aneurysm.

Possible early symptoms of syphilitic aortitis are substernal pain radiating usually into the left arm, rarely into the right or

both arms, associated with a sense of constriction (angina pectoris), proneness to fatigue, mental and physical, headaches, mental disturbance, dyspnœa, hoarseness, fever, cough, cyanosis. The X-ray shows enlargement of the aortic shadow to the right or left, with increase in density and reduced pulsation (on fluoroscopic examination). The Wassermann test is usually positive. The therapeutic test may be employed.

Chronic arteritis is arteriosclerosis (*q.v.*)

Arthritis.—Gr. *ἄρθρον* joint + *-ίτις* inflammation. See Orthopædics, Part 10.

Arthritis Deformans.—See Orthopædics, Part 10.

Arthropathies.—Gr. *ἄρθρον* joint + *πάθος* disease. For a consideration of secondary hypertrophic osteo-arthropathy, see Osteo-arthropathy. The neuropathic arthritides are those occurring in such organic central nervous diseases as syringomyelia, locomotor ataxia, dementia paralytica, hemiplegia, and acute myelitis.

Treatment of the Neuropathic Arthritides.—In the early stages, with much effusion into the joint, employ weight extension and fixation (see Buck's extension, in Orthopædics, Part 10). Aspirate the joint, if need be. Later employ immobilization and relief from the body-weight by means of ambulatory splints. In trophic ulceration, sequestra may have to be removed, or even amputation performed. To prevent ulceration, etc., all traumatism due to ill-fitting shoes, etc., should be avoided.

(See Gangrene of the Skin, for other causes of apparently spontaneous necrosis.)

Articular Rheumatism, Acute.—See Rheumatic Fever.

Chronic.—See Arthritis Deformans, in Orthopædics, Part 10.

Artificial Pneumothorax.—See Penumothorax, Artificial.

Respiration.—See Asphyxia.

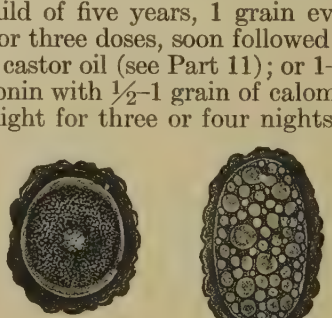
Ascariasis.—Infection with the round- or eel-worm (Ascaris lumbricoides: Gr. *ἄσκαρις* ascaris, L. *lumbricus* earthworm + Gr. *εἶδος* form), which occupies the upper portion of the small intestine. The worms sometimes wander into the bile-ducts, mouth, ear, respiratory tract, through the bowel walls, etc. They may cause intestinal obstruction. Often no symptoms are present, or the symptoms may be many and various. The diagnosis is made by finding the worms and eggs in the fæces (see under Worms).

The ova may be conveyed from the fæces to the mouth by the drinking water, fruits, vegetables, flies, and dirty hands. Boiling destroys the eggs.

Stewart presents the following welcome information concerning the life history of the ascaris lumbricoides. The eggs which pass out of the intestine in the fæces are not infective until the contained embryos develop to a vermiform stage, which takes two weeks or longer, depending on temperature, oxygen supply, and moisture. When swallowed, the eggs hatch in the intestine, and the larvæ migrate to the liver, thence through the hepatic veins and heart to the capillaries of the lungs, and thence to the air vesicles, bronchioles, bronchi, trachea, to the œsophagus and small intestine, where they mature if they are in a suitable host, *e.g.*, man or pig. They do not properly mature in the rat, mouse, guinea-pig, rabbit, sheep, or goat. During invasion of the lungs, fever and dyspnœa may occur, and even pneumonia. In experimentally infected animals pneumonia commonly occurs in seven to ten days after infection.

Treatment.—Santonin is of special efficacy against the round-worm. It may be given with calomel in powder form, mixed with a little pulverized sugar, in the morning, after having first emptied the bowels the night before, and repeated each morning for two or three successive days. The treatment is repeated at intervals of about four days as long as worms or eggs are found in the fæces. Since it takes one month for the adult worm to develop from the egg, the stools should be examined for eggs after the lapse of a month.

The various writers are not agreed as to the proper dose of santonin. Holt gives, to a child of five years, 1 grain every four hours for three doses, soon followed by calomel, or castor oil (see Part 11); or 1–2 grains of santonin with ½–1 grain of calomel every other night for three or four nights.



a *b*

Fig. 18.—Eggs of ascaris lumbricoides. *a*. Round to oval. Within the outer hull a clear nucleus is usually visible in the finely granular yolk. *b*. Elongated oval. Its contents consist chiefly of different-sized, powerfully refractive images, resembling fat droplets. These eggs are sterile, according to Lutz.

Kerley gives castor oil, 2–4 teaspoonfuls, at bedtime, and the next morning, two hours before breakfast, santonin, gr. i, under 2 years of age; gr. iss, from 2 to 4 years; gr. ii, after 4 years. The santonin is mixed with an equal amount of milk sugar.

Riesman gives santonin, gr. ss, with calomel, gr. i, t.i.d., for three days.

G. C. Low gives "the adult dose as 5 gr., that for a child of 2 to 4, 2 gr.; 6 to 10, 3 gr.; 12 to 18, 4 gr."; the dose being "generally repeated three times, either on successive nights or on alternate days." "An emulsion of castor oil and santonin may be given, or the santonin may be given at night and the castor oil the following morning."

Forchheimer, in view of the fact that 2 grains may cause death in a child, advises caution. He gives to a child not more than gr. ⅓ in a dose, and no more than gr. i in twenty-four hours; to adults not more than gr. v in twenty-four hours. He combines it with calomel.

The dose, according to Ortner, is ¾–1½ grs. for adults, ⅙–¾ gr. for children, two or three times daily for several days. He says: "To be sure of avoiding toxic effects, santonin should never be given on an empty stomach."

According to Stiles, the dose should be "⅙ grain for each year of the child's age." According to "Useful Drugs" of the A.M.A., "Santonin is seldom absorbed to a sufficient extent to produce symptoms." "In proper doses it is a reasonably safe drug."

Hare recommends a large enema of salt water immediately after the action of the purge.

The symptoms of santonin poisoning are xanthopsia or yellow vision, mental confusion, nausea, vomiting, diarrhœa, slow pulse, feeble respiration, cramps, muscular twitching, grinding of the teeth, stupor, convulsions, paralysis. When such occur administer emetics (ipecac) and purgatives, and wash out the stomach and colon. Give chloral for convulsions (see Drugs, Part 11).

Other less efficient vermicides are:

1. Olei chenopodii (American wormseed) ♏ii–x, in emulsion, or on a lump of sugar, t.i.d.a.c., for two days, followed by a calomel purge. (The dose of the powder is 20–30 grains. See also Part 11.)

2. Flext. sennæ et flext. spigeliæ, āā ℥ss–i, in water, t.i.d., until purgation occurs; or three doses of one teaspoonful every two hours for a child; two teaspoonfuls for an adult.

3. Thymol. See Ankylostomiasis.

Ascending (Landry's) Paralysis, Acute.—See Landry's Acute Ascending Paralysis.

Ascites.—Gr. ἀσκίτης, from ἀσκός bag. Ascites denotes a peritoneal effusion. It is usually serous. It may be chylous (fatty), or chyliform (non-fatty, milky ascites).

The diagnostic characters are: uniform abdominal enlargement (rarely is the ascitic fluid encysted by adhesions); percussion dulness in the flanks, with tympany in the epigastric and umbilical area; movable dulness (if the amount of fluid is small, percuss the abdomen in the knee-chest posture); "fluctuation shock," obtained by placing the fingers of one hand on one side of the abdomen and tapping the opposite side sharply, while an assistant presses with the edge of his hand along the linea alba, in order to exclude waves caused by tympanitic distention or a large panniculus adiposus.

Consider, in the diagnosis, ovarian tumor, distended bladder, large pancreatic or hydatid cysts, dilated stomach, and a large hydronephrosis. The presence of jaundice suggests hepatic cirrhosis or malignant disease.

Etiology.—A. *General Causes of Serous Ascites.*—Cardiac incompetency; Bright's disease; chronic emphysema; sclerosis of the lung; adherent pericardium (*q.v.*); erythræmia; cachectic states, *e.g.*, advanced nephritis, amyloid disease, anæmia, leukæmia, convalescence from typhoid fever and other infections (the ascites in these affections is usually slight).

B. *Local Causes of Serous Ascites.*—Peritonitis, simple, tuberculous, or cancerous; abdominal tumors, viz., carcinoma, lymphadenoma, ovarian tumor, uterine fibromyoma, papillomatous disease of the ovary with peritoneal implantations; cirrhosis (probably carcinomatous) of the stomach; enlarged spleen (see Splenomegaly); compression of the portal vein in the gastro-hepatic omentum by peritoneal adhesions; proliferative peritonitis, large lymphatic glands, or aneurysm; compression of the hepatic veins by proliferative peritonitis, tumors, or aneurysm; cirrhosis of the liver; syphilis of the liver; lardaceous liver; malignant disease of the liver; thrombosis of the inferior vena cava; rupture of a hydatid or ovarian cyst; ileus (ascitic fluid blood-stained).

C. *Causes of Chylous Ascites.*—Rupture or obstruction of lymphatic vessels, lacteals, the receptaculum chyli, or the thoracic duct, due to tumors, inflammation, tuberculosis, aneurysm, exostoses, adhesions, filariasis, thrombosis of the subclavian or innominate vein, high venous pressure in tricuspid insufficiency, etc., whooping-cough, vomiting, muscular exertion, trauma.

D. *Causes of Chyliform Ascites.*—Any of the causes of serous ascites; also puerperal sepsis; and filariasis.

Treatment.—The treatment depends upon the cause (*q.v.*). The fluid accumulation may be removed to some extent by means

of saline cathartics, especially Rochelle salt, one tablespoonful dissolved in very little water, one hour before breakfast; compound jalap powder, gr. xxx, in a little water, once or twice a day; or calomel, gr. iss, t.i.d., with ext. opii, gr. ss; or elaterium, gr. $\frac{1}{12}$–$\frac{1}{2}$ in pill form, twice or thrice a day; and sweating (*q.v.* under Uræmia); but tapping is the best method. In hepatic cirrhosis early and repeated tapping has resulted in cures. Tapping is certainly demanded in the presence of pain due to distention, dyspnœa, moist râles over the bases of the lungs, diminished urine, hemoptysis or hæmatemesis, and, in alcoholic cirrhosis, the onset of delirium tremens.

Before tapping, always have the patient urinate, or catheterize him. Place the patient on his back, with the head and shoulders raised. Give a diffusible stimulant of brandy or whiskey. Tap preferably in the midline between the umbilicus and pubes, or on a line between the umbilicus and the anterior superior spine of the ilium on the left side (the deep epigastric artery, if wounded, should be ligated). Percuss to see that the site selected is dull. The skin may first be anæsthetized with the ethyl chloride spray, or an injection of a few drops of cocaine solution, about gr. $\frac{1}{10}$ to the dram. If deemed advantageous, a small incision may first be made through the skin. Use a small cannula, and remove the fluid slowly. During the withdrawal of the fluid apply firm pressure with a flannel binder or a three- or four-tailed flannel bandage, in order to prevent syncope. After withdrawing the cannula, seal the puncture with cotton-wool saturated with collodion, and strap the abdomen tightly with adhesive plaster or a bandage, to prevent syncope. Adrenalin chloride solution, 1 : 1000, ʒi in water, ʒi, may be injected into the peritoneal cavity after tapping. In tuberculous peritonitis oxygen may be injected (see Peritonitis, Tuberculous).

After tapping (not very useful before), diuretics may be of service for the purpose of retarding the return of the ascitic fluid: digitalis, caffeine citrate, diuretin, theocin, theobromine, potassium acetate, bitartrate, or citrate, urea, spirits of juniper, oil of copaiba (see Drugs, Part 11).

℞ Pulveris digitalis..... gr. i
Pulveris scillæ..... gr. i
Hydrargyri chloridi mitis.. gr. ¼
Mitte talis pilulæ No. 15.
Sig.—One pill twice a day. (Addison's pill.)

The dietary should consist of bread, butter, milk, buttermilk, junket, cream, eggs boiled three minutes, fish, chicken, mutton; avoiding salt, starchy and vegetable foods (producing flatulence), pickles, spices, alcohol. Fluids should be restricted to no more than one or one and a half pints a day.

An abdominal supporting binder may be worn for comfort.

In hepatic cirrhosis one may consider the pros and cons of the operation which aims at the production of vascular adhesions between the liver and spleen and the parietal peritoneum, and between the omentum and the anterior abdominal wall, the adhesions being brought about by excoriating large opposing surfaces, and uniting them with catgut. About 37 per cent. have thus been cured, while about 33 per cent. have died as a result of the operation. But early operation should reduce this high mortality. Untreated cases present a bad prognosis, although early and repeated tapping has resulted in cures.

In chylous ascites do not repeat tapping unless necessary, since it drains the patient's vitality. The food should be concentrated and easily digestible, and fluids should be restricted. Operation should be considered.

Asiatic Cholera.—See Cholera Asiatica.

Asphyxia.—Gr. *a* priv. + *σφύξις* pulse.

(A.) *Causes of Sudden Asphyxia.*—Foreign body in the pharynx or larynx (see Foreign Bodies in the Air Passages); constriction of the trachea, or strangulation; spasm of the glottis; embolism or thrombosis of the pulmonary artery; large hemorrhage into the bronchi; "unilateral pneumothorax suddenly complicated by pneumothorax on the other side"; "sudden bending of the trachea in patients with goitre"; sudden paralysis of the respiratory muscles; convulsions; enlarged thymus; ulceration of tuberculous lymph nodes into the trachea or bronchi; rupture of a retropharyngeal abscess; overlying.

Asphyxia in the newly born is caused by: maternal convulsions; hemorrhage; prolonged second stage of labor; tetanic contraction of the uterus; the use of ergot in the second stage; grave systemic disease in the mother; death of the mother; compression of the cord; syphilitic periphlebitis or the cord; multiple coils of cord about the neck; premature separation of the placenta; birth with unruptured membranes; precipitate labor; prenatal respiration; brain compression; congenital respiratory, circulatory, or brain malformation or disease; laying the infant in an improper position. (Cerebral hemorrhage is diagnosed by the presence of

a bulging fontanelle, coma, and possibly paralysis; see Hemorrhage, Intracranial, in the New Born.)

(B.) *Causes of Gradual Asphyxia.*—Asthma; pneumonia; bronchitis; emphysema; pulmonary tuberculosis; pleural effusion; carcinoma of the lung; œdema of the lungs; traumatic compression of the trunk; trichinosis; œdema of the glottis; laryngeal diphtheria; tracheo-bronchial tuberculous adenitis; retropharyngeal abscess; retro-œsophageal abscess; pressure of tuberculous bronchial nodes upon the pneumogastric nerve; post-mediastinal abscess in Pott's disease; acute cardiac insufficiency; excessive hemorrhage; smoke; illuminating or coal gas or carbon monoxide; sewer-gas and hydrogen sulphide; drowning.

Treatment.—This depends upon the cause (*q.v.*, in its alphabetical place). If the right heart is dilated, perform venesection, or apply dry cups. A dry cup is applied as follows: A tumbler is swabbed quickly with alcohol, the edges wiped dry, the alcohol ignited and allowed to burn for a few moments, and the cup then quickly applied. If the heart's action is weak, administer strychnine, gr. $\frac{1}{20}$; or caffeine sodio-salicylate, gr. ss, hypodermically; or camphor, gr. ii, in ether, ♏xv, hypodermically; or aromatic spirits of ammonia, one teaspoonful in a tumbler of water.

In suffocation by smoke, dry the face, rub the hands, give hot water to drink freely for the purpose of inducing vomiting, and also to stimulate the kidneys; a hot bath is effectual; or an enema of warm normal saline solution (℥i ad Oi), to which black coffee may be added. Give strychnine hypodermically if the pulse is weak, and apply a mustard plaster over the heart. If the patient is overcome, resort to oxygen inhalations and artificial respiration, cover him with blankets and surround him with hot water bottles.

To administer oxygen in smoke or gas poisoning or drowning, insert in one nostril a rigid tube connected to an oxygen cylinder by a length of "pressure" tubing, turn on a "fairly forcible" current of oxygen, then pinch the nostrils, close the mouth, and allow the oxygen to inflate the lungs; then allow it to escape by releasing the nose. Repeat this fifteen times to the minute, thus producing artificial respiration. (L. E. Hill.) The Hill and Davis artificial oxygen breathing apparatus should be of great service in asphyxia (made by Messrs. Liebe Gorman, Ltd., 187 Westminster Bridge Road, S. E., London).

In asphyxia from drowning, invert the patient in order to expel water from the respiratory passages, and then perform artificial respiration.

Artificial respiration is performed as follows: With the patient either prone or supine, and the clothing loosened, grasp the lower thorax with both hands, one on each side, and, with the weight of the body, compress the thorax, and so produce expiration; then remove the compression, and so permit inspiration. Repeat this procedure about twelve to fifteen times to the minute. If the patient is on his back, an assistant may carry the arms above the head during inspiration, and back across the chest during expiration. Another assistant may employ

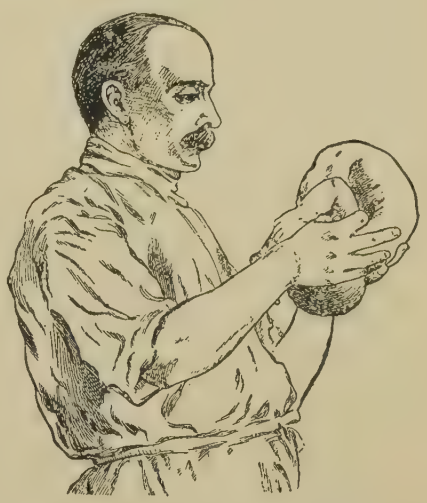


Fig. 19.—Schultze's Method of Artificial Respiration: Expiration (Jewett). Courtesy Lea & Febiger.

rhythmic traction on the tongue, drawing it forward at each inspiration. The patient should be kept warm.

Breathing may be reëstablished even after two hours of artificial respiration. After breathing is established, the patient should be watched for some time, and artificial respiration repeated, if necessary.

In poisoning with illuminating gas (coal gas, carbon monoxide) allow the patient plenty of fresh air. If he is conscious, have him, at intervals, inhale deeply and then blow out forcibly through a goose-quill or other narrow tube. If he is unconscious, wash out the stomach repeatedly with water at a temperature of 105° F.; then introduce two to four ounces of castor oil; withdraw about eight ounces of blood from a vein, and give subcutaneously and rectally warm normal saline solution (℥i ad Oi), at least one quart. Human blood may be infused

(see Blood Transfusion). Oxygen inhalation and artificial respiration (see above) may be required. If the temperature becomes high, place an ice-bag over the heart, and sponge the body with ice-water.

In sewer-gas and hydrogen sulphide poisoning, surround the patient with hot water bottles and warm blankets; give saline infusions and oxygen inhalations, and resort to artificial respiration, if required (see above).

In suffocation with ammonia vapor, have the patient inhale vinegar.

If chlorine or hydrochloric acid is the offending agent, have the patient inhale steam.

In asphyxia neonatorum, first clear the throat of mucus by means of the little finger

Fig. 20.—Schultze's Method of Artificial Respiration: Inspiration (Jewett). Courtesy Lea & Febiger.

covered with absorbent cotton, the child being suspended by the feet; then slap the buttocks and back with the head downward. "Simply swinging the child in the air is a powerful stimulus to respiration," says Holt. The child may be immersed in warm water, the back and chest rubbed vigorously, and ice-water poured on the epigastrium. Or, completely immerse (excepting the face) in hot water at a temperature of 104°–108° F. for several minutes, then plunge in ice-cold water for a few seconds, then at once in hot water again, and persevere in this treatment if the respirations show signs of returning. Rhythmic traction upon the tongue, ten to twelve to the minute, with the child well wrapped in flannels, and the head hanging over the edge of a table, or with the child in a hot bath, is, according to Williams, "generally speaking, the most effective measure at our disposal."

Schultze's method: Wrap the child in a towel and grasp it as shown in the figures 19 and 20.

Swing the child from between the knees

Fig. 21.—Byrd's Method of Artificial Respiration: Expiration (Jewett). Courtesy Lea & Febiger.

Fig. 22.—Byrd's Method of Artificial Respiration: Inspiration (Jewett). Courtesy Lea & Febiger.

over the shoulder, as shown, four or five times a minute.

Byrd's method is shown in figures 21 and 22. This method may be carried on while the child is in the hot bath.

In all methods of artificial respiration the first movement should be that of expiration.

Mucus may be sucked from the trachea and bronchi, and the lungs inflated by means

of a soft rubber catheter containing a wire stylet passed into the larynx.

Another measure is the employment of the faradic current; one pole on the epigastrium, and the other on the sternum, flanks, and thighs.

Persist in efforts at resuscitation as long as the heart beats: for an hour or longer. After establishing respirations, swathe the baby in cotton-wool, and, if necessary, surround with hot water bottles. One may give 5 drops of brandy and 1 drop of digitalis tincture in hot water every two or four hours if required, or strychnine, gr. $\frac{1}{200}$. Watch the child, in severe cases, for twenty-four or thirty-six hours, so as to repeat artificial respiration if necessary.

Asphyxia Neonatorum.—Gr. *νέος* new; L. *nátus*, born. See Asphyxia.

Traumatic.—Gr. *τραῦμα* wound. See Cyanosis.

Astasia-Abasia.—Gr. *α* priv. + *στάσις* stand; *βάσις* step. Inability to stand or walk, unassociated with any disturbance of muscular strength, sensation, or coördination, as tested with the patient recumbent.

Etiology.—Hysteria; neurasthenia; emotion; intention psychosis; exhaustion; traumatism; epilepsy; chorea.

Treatment.—The Weir Mitchell rest treatment and static electricity (see under Med. Elect.) are advised. (See Hysteria, and Neurasthenia.)

Asthenia.—Gr. *α* priv. + *σθένος* strength. See Debility.

Asthma Bronchial—Gr. *ἄσθμα* panting; *βρόγχος* windpipe or bronchus. Bronchial asthma is a neurosis (an effect of vagus excitation), characterized by paroxysmal attacks of a wheezy dyspnœa, chiefly expiratory, lasting several minutes to several hours (or even days), and associated with spasm, hyperæmia and turgescence of the smaller bronchial tubes, and hypersecretion from the entire respiratory tract. The presence in the sputum of rounded gelatinous pellets or "perles," Curschmann's spirals, elongated diamond-shaped Charcot-Leyden crystals, and eosinophile cells, is characteristic of the affection. Eosinophilia is an important diagnostic sign, especially in children, where it is sometimes necessary to distinguish asthma from simple bronchitis or tuberculosis.

Dyspnœic conditions which may resemble asthma are: hay fever, emphysema, acute bronchitis, laryngeal, tracheal, or bronchial obstruction (*q.v.*), renal or uræmic paroxysms of dyspnœa, paroxysmal cardiac dyspnœa, hysterical dyspnœa, onset of influenza. (See Dyspnœa.)

Etiology.—A. *Predisposing Causes.*—Neurotic disposition; heredity—asthma, migraine, epilepsy, gout, etc., in the forbears; disease of the respiratory mucous membrane—*e.g.*, chronic rhinitis, nasal polypi, adenoids, enlarged tonsils, chronic bronchitis, whooping-cough; gout; eczema in children; sensitization or anaphylactization

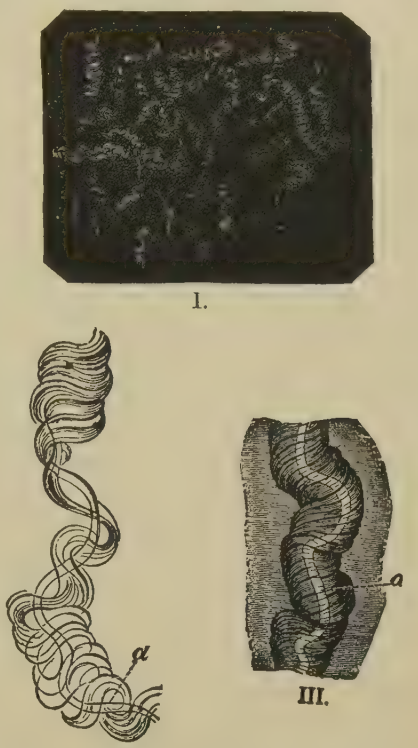


Fig. 23.—Curschmann's Spirals (Tyson after Curschmann). I, Natural size; II and III enlarged. *a*, *a*, central thread. *Webster's Diagnostic Methods*, P. Blakiston's Son & Co.

(*q.v.*) to a foreign protein, e.g., bacteria (in focal infection), animal dander, feathers, various powders, dust, perfumes, pollen, flour, casein, egg albumen, flaxseed, etc. True asthma rarely occurs in cardiac or renal disease.

(B.) Exciting Causes.—Dust; vapors; odors; pollen; animal emanations; emotion; climate; season; atmosphere; locality (capricious as to locality); a "cold"; pregnancy (due possibly to toxæmia); thymus enlargement (*q.v.*) ; reflex irritation from the nose, throat, teeth, ear, skin, gastro-intestinal tract, genital tract, etc., *e.g.*, elongated uvula, nasal polypi, indigestion, flatulence, overeating, constipation, intestinal worms, dentition.

Prognosis.—The prognosis as to cure is more favorable before than after middle life. Chronic bronchitis and emphysema follow recurrent attacks. "Death during the attack is unknown." (Osler.)

Treatment.—(A.) TREATMENT OF THE PAROXYSM.—A hypodermic of morphine, gr. ⅙, with atropine, gr. 1/120, or with strychnine, gr. 1/20–1/15, is usually the most promptly effective remedy. It should be used with caution, if used at all, in the aged, and in cases of bronchitis with much secretion. (It should not be used in renal or uræmic paroxysms of dyspnœa.) Other sedative remedies, to be used with the same caution, are heroin, gr. 1/20, hypodermically, repeated in one hour if necessary; chloral hydrate and potassium bromide, āā gr. x, well diluted, every hour for several doses, then gr. v until relieved, or gr. xv–xxx, āā, in one dose, per rectum (do not give chloral if the heart is weak; it sometimes induces delirium instead of giving relief); hyoscine hydrobromide, gr. 1/100 or 1/80, and atropine, gr. 1/120, are of value where there is a large accumulation of secretion in the bronchial tubes.

℞ Potassii iodidi,
Potassii bromidi. . . āā ʒiiss (gr. 6¼ āā per dose)
Aquæ menthæ piperitæ, q.s. . . . . ad ʒiii

M. Sig.—A teaspoonful, well diluted, two or three times at half-hour intervals, then every four hours. (Forchheimer.)

The following remedies are variously recommended:

Spiritus chloroformi, ʒss–i, in hot whiskey, well diluted.

Pilocarpinæ, gr. ⅛, hypodermically, to produce sweating and relaxation.

Adrenalin, 1 : 1000 solution, 0.1 to 0.5 to 1.0 c.c. (2–7½–15 minims), hypodermically. Fifteen drops in water may be sprayed into the nose and throat, or taken daily by mouth.

Flext. grindeliæ robustæ, in doses of ♏x–ʒi (highly praised).

Pulv. ipecacuanhæ, gr. x, or syr. vel vin. ipecac., ʒii, as an emetic, for children.

Hot water vapor, to which may be added creosote, about 10 drops, or menthol, about gr. x, eucalyptol about ♏x, and benzoin tinct., ʒii–iv, ad Oi of steaming water.

Fumes of burning nitre (potassium nitrate) paper.

Nitrites (see Part 11).

Ergot, hypodermically (see Part 11).

Tobacco smoke.

Hoffmann's anodyne, ʒi–ii, well diluted.

Inhalations of chloroform, ether, ammonia, turpentine, oxygen (*q.v.*), ethyl iodide, ♏x–xv on lint, or amyl nitrite, 3–5 drops.

Antipyrinæ, gr. xii, with caffeinæ sodiosalicylatis, gr. iii, to be given at the very onset of the attack.

Caffeinæ vel caffeinæ citratis, gr. ii–iii, sacchari lactis (sugar of milk) (*q.s.*). Give one powder about one hour before bedtime, and again during the night, if necessary, both to prevent and to ameliorate.

Compressed air in the pneumatic cabinet.

Faradic electricity, each pole being placed "just below the angle of the jaw and in front of the sternomastoid," along the line of the vagus nerve. ("Very effectual," says Yeo.)

Hot hand-and-foot bath.

Cocaine, 5–10 per cent. solution, applied to "sensitive areas" in the nose. X-ray (*q.v.*) (Shilling.)

℞ Pulveris stramonii foliorum . . . ʒii
Pulveris anisi . . . . . ʒi
Tabaci . . . . . gr. iii
Potassii nitratis . . . . . ʒi

M. Sig.—Ignite a teaspoonful and inhale the fumes.

℞ Potassii nitratis,
Aquæ destillatæ,
Pulveris lobeliæ,
Pulveris foliorum stramonii,
Pulveris theæ nigræ . . . . . āā ʒiv
Olei anisi . . . . . ♏i

M. Sig.—Ignite half a teaspoonful and inhale the fumes six or eight times a day, and fumigate the bedroom with the same.

℞ Potassii nitratis,
Stramonii . . . . . āā ʒv
Belladonnæ foliæ,
Cannabis indicæ . . . . . āā ʒiiss

M. fiat mist. Sig.—To be burned and the fumes inhaled. (Ortner.)

℞ Potassii nitratis,
Pulveris lobeliæ,
Pulveris stramonii foliorum,
Pulveris anisi . . . . . āā ʒi

Dissolve the potassium nitrate in one fluid dram of water, mix thoroughly with the powder, and dry.

Sig.—Ignite one dram and inhale the fumes at frequent intervals. (H. Pritchard.)

℞ Extracti cannabis indicæ . . . . . gr. xv
Extracti opii . . . . . gr. iss
Aquæ amygdalæ amaræ . . . . . q.s.
Belladonnæ foliæ,
Stramonii . . . . . āā gr. xxx
Fœniculi . . . . . gr. viiss

Minutim dissecta et contusa. M. fiant cigaretæ No. x.

Sig.—Smoke one or two a day. (Ortner.)

The inhalations usually afford but temporary relief.

℞ Atropinæ sulphatis . . . . . gr. iss
Sodii nitritis . . . . . gr. ix
Glycerini . . . . . ʒss
Aquæ destillatæ q.s. . . . . ad ʒss

M. Sig.—Use as a spray in asthma and hay fever.

"To prevent the recurrence of night attacks," says Holt, "nothing in my experience has been so valuable as a full dose of antipyrine at bedtime—gr. iv at 5 years of age, and gr. vi at 10 years." He also says: "In the severe acute attacks nothing gives so much immediate relief as the use of adrenalin, hypodermically; dose, ♏v to a child of 3 years."

	6 mos.	1 yr.	2–3 yrs.
℞ Syrupi ipecacuanhæ	gtt. xviii	gtt. xxiv	gtt. xxxvi
Antipyrinæ.....	gr. vi	gr. xii	gr. xviii
Sodii bromidi.....	gr. xviii	gr. xxiv	gr. xxxvi
Syrupi rubi idæi...	ʒv	ʒv	ʒv
Aquæ, q.s. ad.....	ʒii	ʒii	ʒii

M. Sig.—One dram in water every two hours—6 doses in 24 hours. (Kerley.)

For children of five to ten years, antipyrine, gr. iii, with sodium bromide, gr. vi–x, repeated in two hours. (Kerley.) Kerley attributes the greater number of cases of asthma to the gouty or rheumatic diathesis, and treats them as he does recurrent bronchitis (*q.v.*). In bottle-fed infants he reduces the sugar one-half, and adds one grain of sodium bicarbonate to each ounce of milk.

Sometimes the remedy given for an asthmatic attack aggravates instead of relieves the symptoms. Different remedies are required for different individuals. The affection, indeed, is very capricious. Asthma occurring only during pregnancy may possibly yield to a milk diet and eliminative measures.

(B.) Preventive Treatment.—Search for and correct any possible causal factor. Cauterize "sensitive areas" in the nose, etc. Build up the general health by means of fresh air day and night; a simple, nutritious diet (no late meals); a cold morning sponge, in a warm room, with the feet in warm water; deep breathing exercises; gymnastics. The carbohydrates should be restricted in flatulency. Brief periods of starvation (5–6+ days), cleansing of the bowels, and copious water drinking—in other words, eliminative treatment—has been very efficacious. Codliver oil, given in winter, is often valuable, especially in children. For anæmia give iron (see Part 11, for drugs).

A dry climate is usually best, but individual experience must decide as to which climate is most suitable. Florida, Southern California, and Egypt have a good reputation. The patient should remain where he enjoys freedom from attacks long enough (several years) to break up the tendency to recurrence.

Potassium iodide, taken over long periods of time (two years or more), is a valuable prophylactic:

℞ Potassii iodidi, solutionis concentrati ... ʒss

Sig.—Five drops well diluted in milk, t.i.d.p.c., gradually increased to 15–20 drops t.i.d. (see Part 11 for toxic symptoms). Omit the medicine for a day every 8–10 days, or for a week every 3–4 months.

For children of five years give drops (grains) ii–iv, t.i.d.; or syrupi acidi hydriodici, ♏v–x, t.i.d. (Holt.)

Next in value to potassium iodide is arsenic:

℞ Liquoris potassii arsenitis (Fowler's solution)..... ʒss

Sig.—♏v, well diluted, t.i.d.p.c., gradually increased even to ♏ xv t.i.d., with intermissions of about ten days each month (see Part 11 for toxic symptoms).

Atropine, gr. $\frac{1}{120}$, t.i.d., increased, if necessary, to gr. $\frac{1}{120}$, six times a day, is also recommended (see Part 11 for toxic symptoms). It is a preventive of anaphylaxis. Calcium chloride (gr. xv four times a day in aqueous solution) is also a preventive of anaphylaxis.

Tincture of nux vomica is praised:

℞ Tincturæ nucis vomicæ, ʒss.

Sig.—Drops 20 in water, t.i.d., increased by 5 drops every three days until 45–60–70–100 drops are being taken, or until there occurs muscular twitching, stiffness of the neck, slight vertigo, or slight disturbance of the vision, when the dose should be reduced 10–20 drops, and continued at the reduced dosage.

Asthma may in some instances be an expression of anaphylaxis or sensitization to a foreign protein. To discover the offending protein, one may try the skin test described by I. C. Walker as follows: Incise the skin to the length of about one-eighth of an inch, but not deep enough to draw blood, in at least two places. Into one cut place the protein to be tested and add a drop of tenth-normal hydroxide solution to dissolve the protein. In the other cut drop the hydroxide solution alone, as a control. At the end of half an hour wash off the cuts. A positive reaction is indicated by the presence of a raised white elevation or urticarial wheal surrounding the cut. Any reaction measuring less than 0.5 cm. in diameter is considered doubtful. Walker considers the intradermal test too sensitive.

According to Walker, the older the patient at the time of onset of asthma the less frequently is he found to be sensitive to protein; and he found none sensitive to protein when the onset occurred after the age of fifty years.

If the patient is sensitive to certain food proteins, these should be omitted from the diet for at least a month, says Walker, who declares that attempts to desensitize the patient by subcutaneous injection of the protein or by feeding gradually increasing amounts have failed. He believes that prolonged abstinence from an offending food protein automatically desensitizes the patient for that protein. Patients sensitive to other proteins, however, may be desensitized by gradually increasing doses given twice weekly, beginning, for instance, with no more

than 100 million bacteria, and increasing each time by no more than 50 million, up to doses of 2000–3000+millions (12 to 20 injections in all).

In obtaining vaccine (see Part II) from raised sputum, the latter must first be washed repeatedly with sterile normal saline solution (0.85 per cent.).

Asthma, Cardiac.—See Cardiac Insufficiency.

Goitre.—See Goitre, Simple.

Renal.—See Chronic Interstitial Nephritis.

Thymic.—See Thymus Enlargement.

Ataxia.—Gr. *ἀταξία* lack of order. Ataxia signifies disturbance of muscular coördination.

Etiology and Classification.—1. Cerebellar ataxia.—Characteristics: reeling, drunken gait, inability to pronate and supinate the wrist rapidly, disordered phonation and articulation, nystagmus, perhaps vertigo; the incoördination, while the patient is lying in bed, is not marked as in tabes (see also Cerebellar Lesions). There is an hereditary cerebellar ataxia associated with optic atrophy. Prescribe coördinated exercises for both the hands and legs.

2. Multiple sclerosis (*q.v.*). The ataxia is usually of the cerebellar type.

3. Friedreich's hereditary ataxia (*q.v.*).

4. Lesions of the midbrain or quadrigeminal bodies. The ataxia resembles the cerebellar type, and is associated with ocular palsies.

5. Alcoholic intoxication.

6. Ear disease.

7. Lesions of the basal ganglia of the cerebrum.

8. Tabes dorsalis (*q.v.*).—Characteristics: excursions of voluntary movements exaggerated, gait stamping, the feet held wide apart, and the patient being compelled to supervise his movements closely; swaying increased on closing the eyes.

9. Multiple neuritis (*q.v.*). The ataxia resembles that of tabes.

10. Dementia paralytica (*q.v.*)

11. Ataxic paraplegia (Gr. *παρά* across + *πληγή* stroke): ataxia combined with spastic paraplegia (paralysis of the legs), occurring commonly in middle-aged males, and due to sclerosis of the dorsal and lateral columns of the cord; pains and eye symptoms common in tabes are usually absent. Traumatism and exposure to cold are causal factors.

12. Any affection of the posterior columns of the cord, *e.g.*, multiple sclerosis, postmeningeal tumors, tumors within the cord, syringomyelia when involving the posterior columns, general myelitis, syphilis, pernicious anæmia.

13. Interstitial hypertrophic progressive neuritis of childhood (*q.v.*), with secondary involvement of the dorsal columns of the cord.

14. An acute ataxia sometimes follows measles, smallpox, malaria, and other infectious diseases.

15. Hysterical ataxia.

16. Ataxia due to a destructive lesion of the parietal area of the cerebral cortex.—It differs from cerebellar ataxia in the persistence of ataxia in the recumbent posture and in the absence of nystagmus. (Consult Brain Localization, and Spinal Cord Localization).

Ataxia, Friedreich's Hereditary.—A slowly progressive ataxia, occurring in early life, usually in several members of a family, associated with nystagmus, disturbances of speech, which is usually slow and scanning, loss of knee-jerks, presence of the Babinski reflex, and, in many cases, oscillatory movements of the body and head, soon followed by paralysis and contractures (talipes equinus and scoliosis). The underlying pathological condition is a sclerosis of the dorsal and lateral columns of the cord.

Alcoholism, syphilis, tuberculosis, and consanguinity in the parents are all causal influences.

The disease lasts many years, and is incurable.

Measures for the prevention of contractures may be taken by splinting the limb against the action of the intact antagonistic muscles (see Orthopædics, Part 10, Talipes Equinus, and Scoliosis). Massage and active and passive movements should be employed. The ataxia may be treated by coördinated exercises, as described under Locomotor Ataxia. The patient should avoid fatigue.

(Marie's cerebellar heredo-ataxia begins after the age of twenty, the knee-jerks are retained or exaggerated; there is spastic paralysis without scoliosis or club-feet.)

Ataxia, Locomotor; Tabes Dorsalis.—Gr. *ἀταξία* lack of order; L. *locus*, place + *movere*, to move; L. *tabescere*, to waste; *dorsum*, back. A not uncommon chronic disease of adult life, of slow course, practically always a remote consequence of syphilis, characterized by (*a*) an incipient stage of lightning pains, hyperæsthesiæ and paræsthesiæ, girdle sensation, visceral crises, Argyll-Robertson pupil, in which the latter contracts during accommodation but not to light, sexual impotence, often retention of urine, loss of the deep reflexes, often ptosis and paralysis of the external eye-muscles,

with resulting strabismus, and sometimes optic atrophy; followed sooner or later by (*b*) an ataxic stage, in which the body sways when the eyes are closed and feet held together (Romberg's sign), the excursions of the voluntary movements are exaggerated, the gait stamping, the feet being held wide apart, and the patient compelled to supervise his movements closely; the muscles are hypotonic, permitting excessive passive movements; trophic disorders (perforating ulcer, arthropathies) are apt to appear; finally (*c*), the stage of paralysis occurs. In cases with optic atrophy ataxia rarely develops.

Etiology.—Syphilis is the cause in the great majority of cases, perhaps in all cases. Other possible causes are: traumatism, severe exposure to cold and wet, sexual excess, excessive exertion and fatigue. Lead poisoning, ergot poisoning, and pernicious anæmia may produce a similar affection.

Prognosis.—The disease is perhaps incurable, but it may become arrested, and often shows marked remissions.

Treatment.—Antisyphilitic treatment with mercury, iodide, and salvarsan or neosalvarsan (see Syphilis,) should always be employed in the pre-ataxic stage, and in all cases in which the treatment was previously imperfectly carried out; perhaps in all cases, without exception.

Enjoin a quiet, temperate, orderly life, at the patient's customary vocation. Fatigue should be avoided, since Edinger seems to show that fatigue is one of the causes of tabetic degeneration. Alcohol and tobacco should be avoided. Tepid full baths followed by slightly cooler douching, general massage and galvanism of the spine, given daily or every other day, are useful invigorating measures. The galvanic current (see Med. Elect.) should be no greater than 6–10–20 milliampères, applied for from three to ten minutes. One electrode is placed on the neck or between the shoulders, and the other in the lumbar region. The electrodes should be broad, measuring about 3 x 5 inches.

The tabetic is very susceptible to climatic changes. A warm, dry climate is best.

The following drugs are reputed to be of some value:

℞ Acidi arsenosi, tabellæ, gr. $\frac{1}{40}$, t.i.d.p.c.

℞ Sodii cacodylatis, gr. $\frac{1}{10}$–$\frac{1}{2}$, t.i.d.p.c.

℞ Sodii et auri chloridi, pilulæ, gr. $\frac{1}{30}$–$\frac{1}{12}$, t.i.d.

℞ Argenti nitratis, pilulæ kaolini, gr. $\frac{1}{4}$, t.i.d.; continued for periods of one or two months, with intervals of six to eight weeks. (Forchheimer.) Discontinue the drug if argyria appears.

Glycerophosphates (for drug formulæ, etc., see Part 11) are valuable.

For lightning pains: Rest in bed; application to the spine of the thermocautery; pyramidon, or phenacetin, or antipyrine, or aspirin, with codeine, or sodium salicylate; morphine, gr. $\frac{1}{6}$–$\frac{1}{4}$, only as a last resort.

For gastric crises: Rest of the stomach and bowels; hot applications to the abdomen; anæsthesin, or cocaine, or cerium oxalate, gr. v, with codeine, gr. $\frac{1}{4}$, or phenacetin, or antipyrin or hyoscine hydrobromide; morphine, gr. $\frac{1}{6}$–$\frac{1}{4}$, only as a last resort.

For laryngeal crises: Inhalations of amyl nitrite or of chloroform; local application of cocaine, 2–4 per cent.

For rectal crises: Morphine suppository, gr. $\frac{1}{4}$.

Osler recommends, for the purpose of allaying neuralgic pains and diminishing the frequency of crises, in cases of increased arterial tension, the prolonged used of nitroglycerin, given in increasing doses until the occurrence of flushing indicates that the physiological limit has been reached (see Part 11).

Provide against rectal retention by means of laxatives and enemas, and against vesical retention by regular catheterization, boric acid irrigations, the passage of sounds, and galvanization over the perineal and suprapubic regions.

In incontinence the patient should empty the bladder regularly every three or four hours during the day.

Rest is the best treatment of trophic ulceration. To prevent it, all trauma caused by ill-fitting shoes, etc., should be avoided (see Arthropathies).

In suitable cases one may employ Fränkel's systematic exercises for the purpose of reëducating the ataxic muscles. These exercises comprise efforts at following on the floor, with the tip of the toe, straight and curved lines and triangles, taking steps of definite lengths, going up stairs, placing the head in various holes in a board, placing the heel of one foot on various parts of the other limb, placing cribbage pegs, typewriting, piano-playing, etc.

The exercises should last at first no longer than five minutes, with five minutes' rest, and should be practiced two or three or four times a day. The time may be slowly and gradually increased. Fatigue should be avoided.

Ataxic Paraplegia —See Ataxia, No. 11.

Atelectasis in Infants and Children.—Gr. ἀτελής imperfect + ἔκτασις expansion. The

manifestations are: cyanosis, with or without rapid superficial breathing or convulsions, and the absence of breath-sounds over the affected area, chiefly the lower lobes posteriorly.

Etiology.—Asphyxiation due to labor (see Asphyxia); prematurity, marasmus, or other form of weakness; compression of the lung by a pleuritic effusion, pericardial effusion, pneumothorax, cardiac enlargement, tumor, or chest deformity due to rickets or Pott's disease; obstruction of a bronchus with mucus or a foreign body.

Treatment.—Attend to the cause (*q.v.*, in its proper alphabetical order). Induce crying, by spanking; or by alternately dipping the child in hot (110° F.) and cold (60° F.) water; or by brief immersion in water at a temperature of 95° F., and pouring one pint of cold water over the chest, back, and head, from four to six times, repeating this every two hours. (Heubner). The mustard poultice may be of some service.

Mouth to mouth insufflation may be practiced, but the lungmotor (or pulmotor) is preferable.

Atelectasis, Post-operative.—See Pulmonary Collapse, Post-operative.

Atheroma.—Gr. *ἀθήρη* porridge. See Arteriosclerosis.

Athetosis.—Gr. *ἄθητος* not fixed. An involuntary, slow, sinuous or twisting, mobile spasm, occurring in certain muscular groups which are spastically paralyzed. It is always secondary to some organic cerebral lesion. According to J. Ramsay Hunt, it is a combination of rigidity with chorea, the rigidity being due to atrophy of the efferent or motor extrapyramidal or pallidal system of the corpus striatum, the function of which is to control automatic and associated movement, and the chorea being due to degeneration of the small ganglion cells of the neostriatal system (candate nucleus), releasing the pallidal (or automatic) motor mechanism from control, with resulting choreiform, movements. It is incurable.

Atonic Dyspepsia.—Gr. *α* neg. + *τόνος* tone. See Dyspepsia, Nervous and Enteroptosis.

Atony, Gastric.—See Dyspepsia, Nervous, and Enteroptosis.

Atony, Intestinal.—See Constipation.

Atrophic Cirrhosis of the Liver.—See Cirrhosis, Portal, of the Liver.

Atrophies, the Progressive Muscular.—Gr. *α* neg. + *τροφή* nourishment. "A chronic atrophic paralysis characterized by a slowly progressing muscular weakness and atrophy beginning in one part of the body and advancing to another part, may occur under the following conditions" (Author?):

1. Progressive (central) muscular atrophy; synonyms: chronic anterior poliomyelitis; amyotrophic lateral sclerosis; progressive bulbar or glosso-labio-laryngeal paralysis. (Gr. *πολιός* gray + *μυελός* marrow; *α* neg. + *μῦς* muscle + *τροφή* nourishment; *γλῶσσα* tongue; L. *labium*, lip; Gr. *λάρυγξ* larynx.)
2. Progressive (neural) muscular atrophy.
3. Interstitial hypertrophic progressive neuritis of childhood (*q.v.*).
4. Multiple neuritis (*q.v.*).
5. Muscular Dystrophy (*q.v.*).

Here are considered only progressive (central) and progressive (neural) muscular atrophy.

(A.) Progressive (Central) Muscular Atrophy.—A rare, slowly progressive, muscular wasting and paralysis, beginning usually in middle life, not usually hereditary or familial, the result of degeneration of the motor tract, and characterized by muscular weakness, atrophy, and usually spasticity, fibrillary tremors, usually exaggerated tendon reflexes, the Babinski reflex, contractures, and bulbar or glosso-labio-laryngeal disturbances, *e.g.*, difficult speech, dribbling of saliva, difficulty in chewing and swallowing, inability to whistle, atrophy and fibrillary tremor of the tongue; in palatal paralysis—regurgitation of fluids through the nose, and immobility of the palate when the patient says "Ab"—due to bilateral degeneration in the medulla and pons of the motor cells of the hypoglossal, facial, pneumogastric, glosso-pharyngeal, vago-accessorial, and trigeminal nerves. The various symptoms characteristic respectively of upper (spasticity: amyotrophic lateral sclerosis, including bulbar palsy) and lower (flaccidity: chronic anterior poliomyelitis) segment paralysis may "coexist in every degree and combination."

Exclude syringomyelia (*q.v.*), and the pseudo-bulbar palsy of cerebral origin (lesions of the cortex of the lower part of the ascending frontal convolution, and of the knee of the internal capsule; atrophy and fibrillary tremor of the tongue are absent). There are acute types of bulbar paralysis due to hemorrhage, embolism, thrombosis, or inflammation (acute poliomyelitis, diphtheria, electric shock) in the pons or medulla. Myasthenia gravis (*q.v.*) is a transient bulbar paresis. The symptoms of bulbar palsy may also result from gummata or tumors involving the vagus, accessory and hypoglossal nerves at the base of the skull.

Etiology.—The chief cause is probably an inherent tendency to early degeneration of the motor nervous system and muscles. Cold, wet, traumatism, fright, and worry are favoring influences. Lead is a possible cause.

Prognosis.—The disease is fatal in one to four or more years.

Treatment.—Fresh air day and night, an abundance of plain, easily digestible food; very moderate exercise, strictly avoiding fatigue; moderate massage, passive movements, galvanism (the last for no more than five minutes daily); iron arsenic, codliver oil, and malt extract are useful invigorating agents. (See Drugs, Part 11.)

Strychnine nitrate should be tried, beginning with a dose of gr. $\frac{1}{100}$–$\frac{1}{60}$, hypodermically, every day, and gradually increasing the dose until muscular twitching occurs, and then continuing the drug at a smaller dose for three or four months, or until the disease is arrested, and then continuing it with an intermission of one week out of every three or four weeks. (Gowers.)

Silver nitrate, zinc phosphide, and ergot are reputed to be of some value. If a positive Wassermann reaction is obtained, employ antiluetic treatment.

In bulbar paralysis there is danger of choking, or of aspiration pneumonia. The food should be liquid or soft or semi-solid. Feeding by the stomach-tube is eventually required. For dyspnœa administer the bromides; tracheotomy (*q.v.*) is sometimes required. For syncope administer camphor, gr. i–ii, in ether, ♏xv, hypodermically, or aromatic spirits of ammonia, one teaspoonful in a glass of water.

(B.) Progressive (Neural) Muscular Atrophy ("Charcot-Marie-Tooth").—A rare slowly progressive, hereditary or familial muscular atrophy, beginning in youth, and exhibiting, as an essential feature, involvement of the distal portions of the limbs, with little or no involvement of the proximal portions. The reaction of degeneration, fibrillary tremors, and perhaps slight sensory disturbances, together with loss of the reflexes, are present. Club-foot occurs. The subject of the disease may live many years.

The treatment is that of the preceding disease.

Atrophy, Acute Yellow, of the Liver.—A very rare, acute, general hepatic necrosis, characterized clinically by jaundice, followed after several days or weeks by headache, vomiting, trembling of the muscles, delirium, hemorrhages from the skin and mucous membranes, diminution of the liver volume, sometimes convulsions, coma, and usually death.

Leucin and tyrosin are often present in the urine. The urea of the urine is much diminished, and the ammonia correspondingly increased (see Urinalysis and Metabolism).

Etiology.—Over 50 per cent. of the cases occur in pregnancy, sometimes during the puerperium. Other causes are: chloroform, ptomaines; alcohol; infectious diseases, *e.g.*, syphilis, septico-pyemia, typhoid fever, diphtheria; profound mental emotion. Similar symptoms may occur in phosphorus poisoning, hypertrophic cirrhosis of the liver, advanced passive congestion, cholangitis, etc.

Treatment.—The treatment is eliminative. In pregnancy, terminate the latter promptly. Purge freely with calomel, gr. v–viii, followed by Rochelle salt, a tablespoonful dissolved in water, or a teaspoonful every hour until free purgation is established. Administer large amounts of water and alkaline diuretics, dextrose, and sodium bicarbonate to counteract acid intoxication (see Acidosis). Hot normal saline solution (0.9 per cent.) should be administered subcutaneously, intravenously, or per rectum—about three pints, at the rate of a pint an hour.

The diet should consist of milk diluted with soda water or Vichy, and dextrose and other carbohydrates (well-cooked cereals) in abundance, since carbohydrates are, in this condition, the food most easily metabolized.

Otherwise, treat the case symptomatically. For vomiting, see Vomiting. For convulsions and delirium give morphine, no chloroform, because of its toxic action upon the liver.

Atrophy, Infantile.—See Marasmus.

Lingual.—See Hypoglossal Paralysis.

Muscular.—See Atrophies, the Progressive Muscular.

Of the Tongue.—See Hypoglossal Paralysis.

Auditory Nerve Affections.—See Ear Diseases, Part 7.

Auricular Fibrillation.—See Arrhythmia, Cardiac.

Flutter.—See Arrhythmia, Cardiac.

Autumnal Catarrh.—See Hay Fever.

Axillary Pain.—See Pain.

Bacillary Dysentery.—See Dysentery, Bacillary.

Bacilluria.—See Typhoid Fever.

Backache.—**Causes.**—Fatigue; debility; neurasthenia; sacro-iliac strain (see Orthopædics, Part 10); sprain of the back (see Orthopædics); flat-foot; inequality of the limbs; lumbago; parturition; post-operative pain; herpes zoster; splanchnoptosis; displaced kidney; loaded colon; renal disease (stone, tuberculosis, nephritis, tumors, infarction, hydronephrosis, pyelone-

phritis, cystic degeneration); perinephritic abscess; thoracic or abdominal aneurysm; spondylitis deformans; infectious spondylitis (see Arthritis in Orthopædics); vertebral exostosis; Pott's disease (see Orthopædics); sacro-iliac disease (see Orthopædics); cancer of the spine; retroperitoneal tumor; ulcer or cancer of the stomach; pelvic disease (uterine displacement, uterine or ovarian tumor; subinvolution and inflammation; see Gynæcology, Part 2); cholelithiasis; lead colic; internal hemorrhoids; prostatitis and enlarged prostate (see Genito-Urinary Diseases); varicocele or relaxed scrotum (see Genito-Urinary Diseases); infectious diseases (influenza, smallpox, typhoid fever, etc.); locomotor ataxia; tumor of the cord (see Spastic Paralysis); diabetes; impingement of the transverse process of the fifth lumbar vertebra on the ilium; fracture of a transverse process of a lumbar vertebra; spondylolisthesis (see Obstetrics).

Bad Breath.—See Breath, Bad.

Banti's Disease.—See Anæmia, Splenic.

Barlow's Disease.—See Scurvy, Infantile.

Basal Metabolism.—Metabolism denotes the chemical changes which occur in the tissues of the body under the influence of living cells. The number of calories of heat produced as a result of the mechanical energy involved in these changes is a measure of the total body metabolism. Basal metabolism denotes the heat production with the body at complete rest following at least twelve hours after the taking of food. It is the energy expenditure involved in mere maintenance. It is proportional to the surface area of the body and varies with age, sex, and the activity of the internal processes of combustion. By its measurement one may note the speed of the vital chemical processes within the body, expressed in calories of heat (heat of combustion or oxidation) per square meter of body surface eliminated per hour.

Metabolism determinations may be made by means of the non-portable gasometer, in the use of which room air or preferably outdoor air is breathed and the expired air collected and analyzed, or, more easily, by means of the Benedict or Jones portable closed-circuit apparatus, in which a measured amount of air or oxygen is rebreathed, the resulting carbon dioxide absorbed by an alkali, such as soda-lime or sodium hydroxide, and the oxygen consumed is measured, either directly, as in the Benedict method, or indirectly, by noting the time required to consume one or more liters of the gas, as in the Jones method. Detailed instructions are supplied by the manufacturers. Metabolism or oxidation, and therefore heat elimination, is increased by muscular exertion, cold, shivering, food, and fever. Therefore, before making a basal metabolic determination, the subject should abstain from food (including tea and coffee) and from exertion for twelve to fourteen hours (*i.e.*, after 6 P.M. of the preceding day), he should lie recumbent for thirty minutes before beginning the test, he should be warm and comfortable and afebrile. Care should be taken that the apparatus, the nose and mouth pieces do not leak.

The following table, by Aub and Du Bois, shows the average normal calories per square meter of body surface per hour for different ages and sexes. There may normally occur a variation of 10 per cent. above or below the assumed standard.

	Calories	
Age, Years	Males	Females
14–16	46.0	43.0
16–18	43.0	40.0
18–20	41.0	38.0
20–30	39.5	37.0
30–40	39.5	36.5
40–50	38.5	36.0
50–60	37.5	35.0
60–70	36.5	34.0
70–80	35.5	33.0

Diseases in which the basal metabolic rate is increased:—Hyperthyroidism (occurring in exophthalmic goitre and thyroid adenoma), hyperpituitarism (active stage of acromegaly), all febrile conditions. According to Boothby, at least 95 per cent. of all abnormally high basal metabolic rates in the absence of fever are due to hyperthyroidism.

Diseases in which the basal metabolic rate is decreased:—Hypothyroidism, Hypopituitarism, starvation, and a few unclassified conditions (Boothby).

The greatest value of the basal metabolic rate determination is in the differentiation of hyperthyroidism from neurosis. In making the test, therefore, nervousness and restlessness must be eliminated. Says Boothby, "all patients having a rate ranging between + 10 and + 20 per cent. should have the test repeated on a subsequent day when disturbing factors are eliminated or at least greatly minimized." An increase of the basal metabolic rate up to 40-50 per cent. is nearly always due to thyrotoxicosis.

Basedow's Disease.—See Exophthalmic Goitre.

Basilar Meningitis.—See Tuberculosis, Acute Miliary.

Bednar's Aphthæ.—See Ulcer of the Mouth.

Bed-Sore; Decubitus.—L. *decubitus*, a lying down. To prevent bed-sores, the bed sheets should be kept clean and smooth, the skin should be bathed frequently (at least twice a day) with soap and warm water, or preferably with equal parts of alcohol and water, dried, and dusted with powder, and the position should be changed frequently (every half-hour in spinal cases). Over points of pressure should be placed air cushions or rings of cotton-wool. The air-bed or water-bed (water mattress) is best. The evacuations should be at once removed, the skin cleansed with soap and water, then plain water, carefully dried, and powdered with equal parts of zinc oxide and starch; or the skin about the genitals and buttocks may be protected with an ointment, *e.g.*, boric ointment, 10 per cent.

As soon as any redness is noticed, the parts should be bathed with alcohol or compound tincture of benzoin, thoroughly dried, dusted with talcum powder or starch and oxide of zinc, equal parts, and a protecting rubber ring or cushion employed. The skin should be pinched up with the fingers in order to increase the circulation.

Sores should be treated with bismuth, aristol, or iodol powders, or peroxide of hydrogen or balsam of Peru and castor oil, equal parts.

Bed-Wetting.—See Enuresis.

Belching, Acid.—See Hyperacidity.

Air.—See Eructations, Nervous.

Nervous.—See Eructations, Nervous.

Bell's Palsy.—See Facial Paralysis.

Bends.—See Caisson Disease.

Beri-beri; Kakke.—(Beri-beri is Cingalese meaning "sheep," so named from the resemblance of the gait of this disease to the trembling walk of sheep; Kakke is Japanese). A chronic endemic and epidemic, chiefly tropical, peripheral neuritis, associated sometimes with cardiac degeneration and anasarca, and caused by the lack of certain elements (vitamines) in the food (mostly the use of polished or milled rice from which the pericarp has been removed, but also the use of dried, tinned, pickled, or sterilized foods).

There are acute and subacute phases of the disease.

The **prognosis** is not necessarily bad, but the disease is very chronic.

Treatment.—Confine the patient to bed, because of the cardiac weakness. Prescribe a nutritious, easily digestible diet of fresh food containing vitamines—raw milk, fresh meat, meat extracts, fresh eggs, fresh vegetables, especially beans and peas, yeast, potatoes, Katjang idjo beans, extract of rice bran, pineapple.

In the early stages of the disease saline cathartics are recommended:

℞ Magnesii use sodii sulphatis ..... ʒi-iss (ʒ 1½-2 per dose)
Acidi hydrochlorici diluti..... ♏xx-xxx
Tincturæ aurantii amaræ ..... ʒi
Aquæ, q.s. ad. ..... ℥vi

M. Sig.—Two tablespoonfuls, t.i.d. for 5-7 days, repeated after an intermission of several days. (A Japanese prescription, quoted in Osler's Modern Medicine.)

Cardiac dilatation and œdema are to be treated as described under Cardiac Insufficiency; but do not carry depletive measures to excess, and thereby cause serious weakness.

For vomiting, for dysponœa, and for local hyperæsthesia are recommended small doses of morphine. The bromides, gr. xv-xx, well diluted in water, from two to four times a day and chloroform liniment are also useful for the latter complaint.

For the paralysis employ, as soon as the œdema has disappeared, massage, passive movements, and galvanism, as described under Multiple Neuritis. Moderate exercise should be resorted to as soon as practicable; but it should be stopped if it increases the heart-rate unduly.

Bier's Hyperæmia.—See under Inflammation.

Bile Ducts, Cancer of the.—See Cancer of the Gall Bladder and Biliary Ducts.

Catarrh, Acute and Chronic, of the.—See Jaundice, Catarrhal.

Suppurative, Inflammation of the See Cholangitis, Suppurative.—

Bilharziasis.—See Distomiasis.

Biliary Calculus.—L. *bil'is*, bile. See Cholelithiasis.

Cancer.—See Cancer of the Gall Bladder and Bile Ducts.

Catarrh.—See Jaundice, Catarrhal.

Cirrhosis of the Liver.—See Cirrhosis, Biliary, of the Liver.

Biliary Colic.—See Cholelithiasis.

Biliousness.—See Liver, Active Congestion of the.

Birth Palsies.—See Hemorrhage, Meningeal, in the New Born; and Upper Arm Type of Paralysis, under Brachial Plexus.

Black Tongue.—See Skin Diseases, Part 5.

Black-water or Hæmoglobinuric Fever.—This serious condition is probably the result of the combined haemolytic action of chronic aestivo-autumnal malaria and quinine. Sandwith attributes it to want of regularity intaking the quinine rather than to excessive dosage.

Spontaneous recovery often occurs, but about 10-12 per cent. of the patients die.

Treatment.—Remove the patient from the malarial region and confine him to bed. Withhold quinine, unless parasites other than cres-

cents, which are not affected by quinine, are present in the blood, when doses of gr. i-ii, t.i.d., may, perhaps, be cautiously tried, the urine being watched closely and measured. If well borne, the quinine may be cautiously increased to five or more grains.

Treat the kidney condition: keep the bowels open with calomel (*q.v.* in Part 11), give copious warm drinks, *e.g.*, barley water, albumen water, weak chicken broth, and prescribe diuretics and diaphoretics:

℞ Spiritus ætheris nitrosi.. ℥i (ɱxl per dose)
Potassii acetatis..... ℥i (gr. xl per dose)
Liquoris ammonii acetatis ℥iv (℥ii ℈ii per dose)
Syrupi simplicis..... ℥ss
Aquæ camphoræ, q.s., ad ℥vi

M. Sig.—One tablespoonful, after shaking, dissolved in a glass of water, three or four times daily. Keep the patient well covered with woolen blankets and guard against chilling draughts. Hot normal saline (℥i ad Oi) subcutaneous infusions and enemata are advised; also oxygen inhalations (see Pneumonia, Lobar). Sweating (see Uræmia) may be required.

Hearsey recommends the following:

℞ Hydrargyri perchloridi. gr. ss (gr. ½₂ per dose)
Sodii bicarbonatis..... ℥ii ℈i (gr. x per dose)
Aquæ, q.s., ad..... ℥ii

M. Sig.—One dram every two hours for one day, then every three hours until the urine improves in color. Take no acid drinks. (Hearsey.)

For vomiting, see Vomiting; nutrient enemata (see Rectal Feeding) may be necessary.

For restlessness, backache, or insomnia, or vomiting, morphine may be demanded.

For heart-failure, see Cardiac Insufficiency; for anuria, Anuria.

During convalescence, iron and arsenic may be required (see Part 11).

Rest in bed and a milk diet should be continued until all evidences of nephritis have disappeared. P. W. Plehn insists that in severe cases of black-water fever, nothing should be done aside from keeping the patient in bed. He should not be moved, or violently purged, or sweated, and heart stimulants should be scrupulously avoided.

Blastomycosis.—See Skin Diseases, Part 5.

Bleeder.—See Hæmophilia.

Blindness.—See Eye Diseases, Part 6.

Blood Examination.—A. Enumeration of the Red and White Blood-Cells.—The normal erythrocyte count is 5,000,000 per c.mm. for men, and 4,500,000 for women. The normal leucocyte count is 5,000—10,000, average 7500 per c.mm. See Leucocytosis; Lymphocytosis; Eosinophilia; Mast-Cell Leucocytosis; Leucopenia.

1. To Count the Red Blood Cells.—The diluents used are:

Hayem's solution:
Mercuric chloride.....0.5 gram
Sodium sulphate.....5.0 grams
Sodium chloride.....1.0 gram
Distilled water.....200.0 c.c.

Toisson's fluid (colors leucocytes blue):
Sodium chloride.....1.000 gram
Sodium sulphate.....8.000 grams
Neutral glycerine.....30.000 c.c.
Distilled water.....160.000 c.c.
Methyl violet 5B.....0.025 gram
Filter before using, to remove yeast cells.

Technique.—Obtain, by puncture, avoiding compression or manipulation, a large drop of blood from the lobe of the ear or tip of the finger. Insert the tip of the erythrocyte pipette (erythrocytometer) in the drop, and draw the blood by suction exactly to the mark 0.5. If the blood is drawn too far, it may be brought down by rubbing the tip of the pipette with the finger. Now wipe away any excess of blood, and dip the pipette into the diluent, at the same time applying immediate suction and drawing the fluid up to the 101 mark. Now close both ends of the pipette with thumb and finger and shake vigorously so as to mix the contents thoroughly. Now blow the three or four drops of unmixed fluid from the capillary, and place one drop of the remaining fluid on the centre of the ruled area of the counting chamber. Cover with the cover-glass so as not to include an air-bubble. If Newton's color rings are not brought out by pressure, make another preparation. Examine now with the low power to make sure that the cells to be counted are uniformly distributed. Put on the higher power, and count all the red cells in each unit of 25 small squares, 16 units or large squares in all. Count from left to right, beginning at the upper left corner of the 16 large squares. In counting, disregard cells touching the right and lower boundaries of the small squares, but include those touching the upper and left boundaries.

Each small square has an area of $\frac{1}{4000}$ c.mm.; the whole field of 400 squares, $\frac{1}{10}$ c.mm. The number of cells counted in the whole field multiplied by ten equals the number of cells in one c.mm. Multiply this by 200, the degree of dilution (it would be 100, if the blood were originally drawn to the mark 1 in the pipette), to obtain the number of cells in one c.mm. of undiluted blood.

2. To Count the White Cells Alone.—Use the leucocyte pipette (leucocytometer) and a diluent consisting of 0.5 or 1 per cent. solution of glacial acetic acid in water (to destroy the red cells), and containing, perhaps, gentian violet. It should be made fresh, to avoid contamination with yeast cells. Draw blood to the mark 1, and diluent to the mark 11; making a dilution of 1 to 10

(blood drawn to 0.5 equals a dilution of 1 to 20). Count the cells in the whole ruled space and multiply the result by 100 (200 if the dilution were 1 to 20); thus obtaining the number of white cells in 1 c.mm. of blood.

Wash the counting chamber with distilled water and dry before and after using. Never use alcohol or ether. Wash out the pipettes, after using, with distilled water, then with alcohol and ether, and blow dry with dry air until the glass bead in the ampulla is freely movable.

B. Hæmoglobin Estimation.—1. TALLQUIST'S METHOD (not accurate within ten degrees).—Saturate a strip of the filter paper (which comes with the Tallquist scale) with the blood to be tested; let the latter dry until the humid gloss has disappeared; then place it at once beside, not behind, the scale, with the light(always daylight) behind or at one side.

2. SAHLI'S METHOD.—The standard of comparison in Sahli's hæmometer is an acid hæmatin solution with a color tone corresponding to a one per cent. solution of normal blood. Before using, invert the tube so as to allow the hæmin (or hæmatin hydrochloride) precipitate to diffuse uniformly.

Dilute the blood with ten times its volume of N/10 normal HCI (made by diluting 15 c.c. of c.p. concentrated HCI to 1000 c.c.) by taking the blood with the 20 c.mm. pipette (drawn up to the mark 1) and blowing it into the graduated tube, which already contains the N/10 normal HCI up to the mark 10. Mix the blood and acid, and as soon as a clear dark brown color is visible (caused by a fine suspension of Hæmin), add water carefully with a dropping pipette and mix, until the color tone corresponds, by transmitted light, to that of the standard solution, when the percentage of hæmoglobin may be read off. For women add one-eighth to the percentage values as read, as female blood is said to run from 12½ to 20 per cent. less in hæmoglobin than the blood of man; for a child one-seventh should be added to the percentage. Calculate the absolute value per 100 c.c. of blood by multiplying the percentage obtained by 0.1377 (the normal number of grams of hæmoglobin per 100 grams of blood is 80 = 100 per cent. hæmoglobin).

The Sahli test is said to be accurate within two per cent.

3. THE FLEISCHL-MIESCHER METHOD.—First see that the chambers do not leak, by placing in one compartment the diluting fluid (0.1 per cent. sodium carbonate solution; it should be clear and contain no bicarbonate). Now draw blood into the diluting pipette, to the mark ½ or ⅔ or 1, according to the supposed degree of anæmia, and dilute to the mark above the ampulla (blood to 1 = dilution of 200; blood to ⅔ = dilution of 300; blood to ½ = dilution of 400; the two marks above and below the main divisions correspond to $\frac{1}{100}$ of the contents of the capillary tube). Shake and mix thoroughly the blood and diluent, blow out the unmixed contents of the capillary tube, and blow the diluted blood into one compartment of the 15 mm. cell, so that a convex meniscus appears above the top of the chamber. Fill the other compartment with the diluent. Slide the groove cover-glass over the compartments, place the cap over the cover-glass with its opening at right angles with the vertical partition between the chambers, place the cell in the central opening of the stand, and adjust the light. Work in a dark room with a candle about eighteen inches from the stand and to the side, look into the cell from the side, with the eyes about one foot above the cell. Contrast the color tones by quick movements of the slide, and rest the eyes at short intervals. When the color of the diluted blood is matched, take the reading of the instrument.

Now transfer the diluted blood from the 15 mm. cell to one compartment of the 12mm. chamber, by means of the pipette, and make readings again. These latter readings should be four-fifths of those obtained with the 15 mm. cell. This latter test is a control over the former.

Now turn to the "table of calibrations" for the number of mg. of hæmoglobin in 1000 c.c. of the diluted blood corresponding to the color scale reading. Multiply this by the degree of dilution to obtain the mg. in 1000 c.c. of undiluted blood. Divide this by 10 to obtain the amount in 100 c.c.

The percentage of normal is obtained by dividing this latter figure by 14 (the amount of hæmoglobin corresponding to the 100 division of the scale).

The *color index* is the hæmoglobin percentage of normal divided by the percentage of normal (5,000,000) of red cells. It is normally 1.

Secondary anæmia, as distinguished from primary anæmia, presents the following blood picture: ordinarily there is only slight reduction in the number of red blood cells, a greater reduction in hæmoglobin, so that the color index is below one. Normoblasts, polychromatophilia, stippling, and poikilocytosis may be present, but megaloblasts are exceedingly rare. Says Cabot: "Achromia or abnormally great pallor of the centres of the cells is the most important point in the recognition of secondary anæmia and the exclusion of pernicious anæmia."

C. The Coagulation Time. — RUDOLPH'S METHOD.—Apparatus: glass tubes, about 18

cm. or 7 inches long, and 1.5 mm. in diameter; a pint thermos bottle, with the ordinary cork replaced by a triply perforated rubber stopper, two of these perforations containing brass tubes, 7 inches in length, and of sufficient calibre to hold easily the glass blood tubes, and the other perforation containing a thermometer.

Fill the thermos bottle with water at a temperature of 20° C. and insert the stopper. Puncture the ear lobe or finger, noting the exact time of puncture, and almost fill two of the glass tubes from the same drop. Place the tubes in the brass tubes of the stopper, and seal their protruding ends (where the blood entered) with a Bunsen or alcohol flame. At the end of about five minutes, and at intervals thereafter of fifty to thirty seconds, withdraw with gloved fingers the first tube filled, scrape it with a sharp file, break it across, and slowly separate the broken ends. As soon as a thread of fibrin is observed to appear between the broken ends, note the time. The interval between the puncture and the appearance of fibrin is the coagulation time of the blood. The tube No. 2 may be used as a control. By this method the coagulation time averages normally eight and a half minutes.

The coagulation time is delayed in hæmophilia, purpura, jaundice, hæmoglobinæmia, asphyxia, general dropsy, cobra poisoning.

D. The Fresh Blood may be examined for malarial parasites, the spirochete of relapsing fever, filaria, and trypanosomes.

Puncture the ear and wipe away the first few drops of blood. To the top of a drop of blood about the size of a large pinhead touch the centre of a cover-glass held with pinch forceps. Drop the cover on a previously warmed slide. Do not press. In examining for malarial parasites, look particularly for brassy red cells.

E. Technique of Preparing and Staining Smears.—(a) Collect the blood on one end of a clean dry slide, and with another slide evenly touching the blood at an angle of 45° with the first slide, draw the blood along the first slide with little pressure, maintaining the angle of 45°. Dry the smear in the air.

(b) Fix the smear by immersing it in absolutely pure methyl alcohol for three to five minutes, or even longer. Then drain it off, and allow it to dry in the air; or wash with water and dry between sheets of filter paper.

(c) Stain in 0.5 per cent. alcoholic (70 per cent.) solution of Grubler's "French pure" eosin for three to five minutes.

(d) Wash in distilled water and dry between filter paper.

(e) Stain in a well-mixed solution of 20 drops of 0.25 per cent. aqueous solution of methylene blue (B.pat.) and ten drops of the above eosin solution for one-half to one minute.

(f) Wash quickly and briefly with distilled water and dry at once between filter paper or over the flame.

(g) Mount in Canada balsam.

The above is the eosin-methylene blue stain. Red cells and eosinophile granules are stained bright red; neutrophile granules, pink to bright red (smaller than eosinophile granules); nuclei, mast-cell granules, bodies of the lymphocytes, platelets, malarial organisms, trypanosomes, and filaria, varying shades of blue.

R. C. Cabot prefers Wright's stain, which may be had from the medical supply houses.

TECHNIQUE.—Flood the surface of the smear with the stain, and allow it to act for one minute. Then add distilled water until a greenish metallic lustre appears like a scum. After about two minutes wash off cautiously with water, and keep the film in clean water for about a minute more, or until it takes on a light pink color. Dry gently with blotting paper, and mount in Canada balsam.

Red cells are stained orange or pink, eosinophile granules red or pink, neutrophile granules lilac, nuclei blue or dark lilac, large mast-cell granules purple, fine basophile granules deep blue, bodies of the lymphocytes robin's egg blue, platelets deep blue or purple, bacteria blue, malarial and other parasites blue, the chromatin element varying from lilac to ruby-red to black. (Webster.)

A special stain for malarial organisms, by which little else is stained but the organisms, is the thionin stain of Futcher and Lazear:

Carbolic acid 2%	100.0 c.c
Thionin (Lauth's Violet), saturated solution in 50% alcohol	20.0 c.c.

Allow to ripen for a few days.

Fix the smear with a 0.25 per cent. solution of formalin in 95 per cent, alcohol for one minute. Wash in water and dry between filter paper. Then stain for ten to fifteen minutes. Wash in water, dry, and mount in Canada balsam.

The plasmodia appear as deep purple irregular masses within the faint green erythrocytes; the hyaline forms appear as reddish violet ring-like bodies.

James's method of thick film staining is as follows: spread a drop of blood in the form of a circle ¾ inch in diameter and allow it to dry. Immerse it in ethyl alcohol, 50 c.c., containing 10 drops of hydrochloric acid, until the hæmoglobin is dissolved. Now wash in running tap water for ten to twenty minutes,

and stain with a Romanowski stain for two or three minutes; then add water from time to time, and after eight minutes wash and examine.

F. The Differential Count.—Count in the stained smear from 250 to 500 leucocytes, unless the smear is even and the leucocytes well distributed, when 100 may suffice.

(a) Polymorphonuclear Neutrophiles: about 10 microns in size, containing an irregularly shaped nucleus and fine neutrophile granules; the ordinary pus cells, 65 to 75 per cent. of the white blood-cells, or 5000 per c.mm. (lower than this before the age of fifteen).

(b) Polymorphonuclear Eosinophiles: about 10 microns in size, containing an irregularly shaped nucleus and coarse acidophilic granules; 2 to 4 per cent. of the white blood cells, or 100 to 200 per c.mm.

(c) Polymorphonuclear Basophiles or Mast Cells: about 10 microns in size, containing an irregularly shaped nucleus and irregular basophilic granules; about 0.5 per cent. of the white blood cells, or 0 to 50 per c.mm.

(d) Lymphocytes or Small Mononuclears: Any non-granular mononucleated cell smaller than a polymorphonuclear neutrophile; the nucleus nearly fills the cell, which shows a narrow rim of homogeneous basophilic cytoplasm; 20 to 25 per cent. of the white blood cells, or 1200 to 2000 per c.mm. (higher than this before the age of fifteen).

(e) Large Mononuclears: large cell, containing a large round or oval, usually eccentrically placed nucleus, and abundant nongranular cytoplasm (including the transitional forms with indented nucleus); a large mononuclear is any non-granular mononucleated cell larger than a polymorphonuclear neutrophile; 3 to 5 per cent. of the white blood-cells, or 200 to 400 per c.mm.

(f) Myelocytes: mononuclear cells with a large round, oval, or kidney-shaped, pale, eccentric nucleus, and neutrophile, eosinophile or basophile granules in the cytoplasm.

G. Fragility of the Red Blood-Cells.—Place in a very small test-tube, 50 drops of a 0.5 per cent, sodium chloride solution; in a second tube, 48 drops; in a third, 46 drops, and so on; and add distilled water sufficient to make 50 drops in each tube. Introduce 20 c.mm. of blood into each tube from a capillary measuring pipette, *e.g.*, a Gower's hæmoglobinometer pipette. Stand at room temperature for two hours. Hæmolysis normally begins in a tube containing 44 drops of salt solution and 6 drops of distilled water, and is complete in the fifth or sixth following tube. The percentage of saline concentration in the 44-drop tube is $^{44}/_{50}$ of 0.5 = 0.44 per cent.

If the blood-cells are very fragile, begin with, say, 0.7 per cent. salt solution, and put in the first tube 70 drops; in the second 68; etc., and add distilled water up to 70 drops in each case. If hæmolysis begins in the tube containing 64 drops, the saline concentration is $^{64}/_{70}$ of 0.7 = 0.64 per cent. (P. Ribierre's method.)

Diminished resistance of the erythrocytes to hyposmotic solutions occurs in fever, chlorosis, pernicious anæmia, and cyanosis. Increased resistance occurs in carcinoma and obstructive jaundice (Hamburger). In obstructive jaundice the resistance of the corpuscles is raised, while in hæmolytic jaundice it is lowered.

H. Blood Chemistry.—See Metabolism.

Blood Fluke Diseases.—See Distomiasis.

Blood-Pressure.—**Method of Taking the Blood-Pressure.**—Fit closely around the upper arm the inflatable rubber armlet of a Riva-Rocci sphygmomanometer of the Mercer or Nicholson type. With the stethoscope over the brachial artery just distal to the cuff, pump in air until the pulse is quite obliterated, then let the mercury column slowly fall, and note the point on the scale at which the tapping systolic sound first reappears. This point represents the systolic or maximum pressure in the brachial artery or the total energy of the heart at that instant. Allow the mercury column gradually to descend: "about 30 to 90 mm. below the systolic reading the sound suddenly changes from a sharp tap to a dull, feeble thud." The height of the mercury column at this point represents the diastolic or minimum blood-pressure (R. C. Cabot.) It measures peripheral resistance (vasomotor tonus; it is low too in aortic insufficiency).

The normal systolic blood-pressure is 110 to 150 to 160 mm. of mercury. It varies with the age, becoming normally higher as one grows older. A systolic pressure above 160 in one over forty is undoubtedly above normal; a systolic pressure below 90 is undoubtedly below normal. Says Cabot: "With any of the various types of Riva-Rocci instrument, the readings in healthy adults at rest are approximately as follows: systolic, 110 to 135 mm. of mercury; diastolic, 60 to 90 mm. Hg." "The 'pulse pressure,' *i.e.* the difference between the systolic and diastolic pressure, averages 30 to 60 mm. Hg.; children under two years, 75 to 90 mm.; in older children, 90 to 110 mm. Excitement or exercise raises the pressure temporarily but considerably. It is 5 to 10 mm. lower in recumbency than in the sitting position." It measures the effective energy of the heart.

A. Causes of Increased Systolic Blood-Pressure.—Advancing age; mental and muscular exertion; excitement; over-indulgence in eating and drinking; sedentary life; cold temperature; acute pain; arteriosclerosis (*q.v.*); toxæmias of pregnancy; parturition; obesity; alcohol; tobacco, gout; diabetes plumbism; migraine; convulsions; erythræmia; hysteria; intestinal intoxication; perforation in typhoid fever; chronic nephritis; uræmia; syphilitic aoritis, with or without aneurism; hyperthyroidism; increase of intracranial pressure, as in apoplexy due to hemorrhage, skull fracture, meningitis, hydrocephalus; tumor, abscess; certain drugs in therapeutic doses, *e.g.*, adrenalin, pituitary extract, thyroid extract, ergot, physostigmine, strychnine, digitalis, strophanthus, adonis vernalis, convallaria majalis, atropine, ammonia, alcohol, ether, nitrous oxide, etc.; asphyxia; emphysema; asthma; laryngeal or tracheal stenosis; myocardial insufficiency; uterine fibromata; constipation; menopause; focal infection.

Treatment of High Blood-Pressure.—(See Arteriosclerosis.) Consider, of course, the cause. A brief course of starvation from five to six days, with or without the free drinking of purgative waters (see under Constipation), may be of value.

B. Causes of Lowered Systolic Blood-Pressure.—Following exercise; warmth; massage; purgation or diarrhœa; emesis; hemorrhage; debility; exhaustion; feeble heart action; shock (*q.v.*); hypothyroidism; acute infections, except epidemic cerebrospinal meningitis; chronic wasting diseases or cachexias, *e.g.*, tuberculosis, carcinoma, Addison's disease; acute adrenal insufficiency; anæmia; polycythemia with splenomegaly; amyloid disease of the kidney; sometimes nephritis; cyclic albuminuria; tachycarida; cardiac dilatation; mitral stenosis; sometimes arteriosclerosis; neurasthenia; general paralysis of the insane; following a convulsion; following lumbar puncture; sometimes exophthalmic goitre; osteo-arthritis; intestinal toxæmia; anaphylactic shock; just preceding death; bromism; certain drugs, *e.g.*, aconite, veratrine, tobacco, alcohol, bromides, chloroform, ethyl chloride, antimony, nitroglycerine, amyl nitrite, sodium nitrite, erythrol tetranitrate, etc.

Treatment of Low Blood-Pressure.—Attend to the cause. See above for drugs which raise the blood-pressure.

Blood Transfusion.—Indications: hemorrhage, shock, prolonged infection, anæmia, subnormal blood-pressure from any cause.

A donor should be chosen who is healthy, who is free from any blood communicable disease, such as syphilis, malaria, trench fever, etc., whose plasma does not agglutinate or hæmolyze the patient's red cells, and whose red cells are not agglutinated or hæmolyzed by the patient's plasma. The blood is best taken over two hours after a meal. About one-third of cases that are transfused without a precautionary test how some reaction, sometimes even death, due to agglutination or hæmolysis of red blood-cells (caused by isoagglutinins and isohæmolysins). The latter is the more dangerous. In agglutination, thrombi may be produced; but in hæmolysis, foreign protein floods the blood. Agglutination may be present without hæmolysis, but hæmolysis is always preceded by agglutination.

If an ideal donor can not be obtained, it is safer to use a person whose plasma agglutinates the patient's cells than one whose cells are agglutinated by the patient's plasma, because the recipient's cells are protected by his own plasma.

Immediate members of the patient's family should be obtained, if possible, since they offer the least risk, but their blood ought nevertheless to be tested.

If a test in vitro can not be made, one should draw up a few drops of sodium citrate solution, 0.2 per cent., and eight drops of the prospective donor's blood into a syringe, shake thoroughly, and inject into a vein of the patient. Within fifteen minutes, if the blood is incompatible, there will occur inspiratory dyspnœa, precordial pain and distress, and, possibly, lumbar pain and urticaria, and, if more blood is injected, vomiting or purging, pupillary dilatation and sweating, indicative of shock.

Selection of a Donor.—The simplest and a "fairly reliable" test, says J.L. Miller, is to mix a few drops of defibrinated blood from the donor with about an equal amount of blood from the recipient, allow the mixture to stand for half an hour, or until the serum separates, and note whether the latter is blood-tinged.

A test of iso-agglutination as well as hæmolysis is that of Rous and Turner. Using a leucocyte-counting pipet which has been rinsed with a 10 per cent. aqueous solution of sodium citrate, draw the citrate solution up to the mark,1; then fill it rapidly to the mark, 11, with blood from an ear or finger puncture, and expel it at once into a small test-tube. Should it happen that there is not enough blood to fill the pipet, empty the pipet at once into the test-tube, in order to mix the blood and citrate solution and prevent clotting; then draw up the mixture again into the pipet, and completely (or approximately)

fill it from another puncture. One pipetful of citrated blood should be obtained from each prospective donor, and two from the recipient if several donors are to be tested. The pipet should be rinsed each time before obtaining fresh blood, first with citrate, then with distilled water, and again with citrate.

After obtaining the citrated specimens of blood in separate test-tubes, make the following mixtures by means of a capillary pipet (Fig. 24): 9 parts of patient's citrated blood with 1 of donor's; 1 part of patient's blood with 1 of donor's; 1 part of patient's blood with 9 of donor's. Draw up the blood to an arbitrary mark on the capillary pipet, then draw up one air-bubble, and so on, alternately.

FIG. 24.—A capillary pipet.

After standing for about fifteen minutes, examine a drop of the mixture (mixed with a drop of salt solution to separate the red cells more) microscopically for clumping.

The presence of greater clumping in the first than in the second mixture indicates agglutination of the patient's corpuscles by the donor's plasma. The presence of clumping in the second mixture, with little or none in the first, indicates agglutination of the donor's corpuscles by the recipient's plasma.

It has been learned that there are just four types of human blood: type or group I, found in 5 per cent. of all individuals, whose plasma agglutinates no corpuscles, but whose corpuscles are agglutinated by the plasma of all three other types; group II, 40 per cent., whose plasma agglutinates corpuscles of groups I and III, and whose corpuscles are agglutinated by plasma of groups III and IV; group III, 10 per cent., whose plasma agglutinates corpuscles of groups I and II, and whose corpuscles are agglutinated by plasma of groups II and IV; and groups IV, 45 per cent., whose plasma agglutinates corpuscles of groups I, II, and III, but whose corpuscles are agglutinated by no plasma.

The inter-relations of these four types is graphically shown on the following page. (Fig. 25).

The + sign means corpuscles agglutinated; the O sign, corpuscles not agglutinated; thus, the corpuscles of type I, reading transversely, are not agglutinated by the plasma of type I, but by the plasma of types II, III, and IV; and the plasma of type I, reading vertically, agglutinates no corpuscles.

The group to which any individual belongs may be determined by testing the blood with only groups II and III sera, as follows, the sera being obtainable from the U. S. Army Medical School, Wash., D. C., or the Rockefeller Institute, N. Y.:

On a clean, dry glass slide, place on the left end a drop of group II serum, and on the

Corpuscles of Types.	Plasma of Types. I	II	III	IV
I	O	+	+	+
II	O	O	+	+
III	O	+	O	+
IV	O	O	O	O

right end a drop of group III serum. From an ear lobe of the individual to be grouped obtain by puncture a drop of blood about half the size of the drop of serum on the slide and mix it thoroughly with the serum, one drop of blood with each drop of serum, using separate droppers or glass rods for each. The occurrence of a brickdust-like appearance in the mixture denotes agglutination. When agglutination occurs in both sera, the individual belongs to group I; when agglutination occurs only in III serum, the individual belongs to group II; when agglutination occurs only in II serum, the individual belongs to group III; and when no agglutination occurs in either serum, the individual belongs to group IV.

Use a donor of the same group to which the recipient belongs, if possible; otherwise use a group IV, or universal, donor. It is stated, however, that one can receive the blood of any other individual whose red cells are not agglutinated by the recipient's plasma, because the cells of the recipient are protected by his own plasma.

A simple and accurate test is as follows: Mix one drop of recipient's and one drop of donor's blood in separate receptacles with 2 c.c. of a 2 per cent. aqueous solution of sodium citrate. Draw out two tubes to a capillary point; draw up into one tube the

recipient's citrated blood, and in the other the donor's blood; seal one end, and centrifuge. On one end of a clean, dry glass slide, place, with a loop, one drop of donor's cells with one drop of recipient's serum, and on the other end of the slide one drop of recipient's cells with one drop of donor's serum. After five to fifteen (to thirty) minutes look for agglutination in the first mixture.

The blood must be matched before each transfusion, for a donor may match at one time and not at another.

Methods of Blood Transfusion.—The Kempton-Brown Method.—*Equipment.*—Kempton-Brown glass cylinders, 2 sizes, 100 c.c. and 250 c.c.; sharp scalpels or cataract knives; scissors; small hæmostats; mosquito hæmostats; tissue forceps; medicine droppers; hypodermic syringes; tourniquet or blood-pressure instrument; alcohol lamp; alcohol; ether; tr. iodi; cocaine or novocaine; paraffin, or "Vincent's mixture" (stearin, 1 part; paraffin, 2 parts; vaseline, 2 parts); sterile towels; sterile cotton; autoclave.

The tubes are thoroughly cleansed, first with water, then alcohol, then ether, and dried. A small lump of paraffin or of "Vincent's mixture" is placed in the tube, the latter corked, wrapped in a towel, and sterilized in an autoclave. The tube is removed while hot, and rapidly rotated until the inner surface is coated with the paraffin, the excess being poured out. Obstructing solidifications of paraffin are removed by heating over an alcohol lamp. The tubes are kept in sterile towels surrounded with sterile cotton.

Technique.—Under strict asepsis and local anæsthesia, expose a vein of both donor and recipient for a distance of one inch, and ligate the donor's vein distalward and the recipients vein proximalward. Wash the wound in normal saline solution (0.9 per cent.), dry rapidly, and drop liquid paraffin over the vein. Strip off the adventitia from the anterior aspect of the vein. Apply a Crile artery clamp and open the vein between clamp and ligature with a cataract knife. Wash out at once with salt solution and drop on liquid paraffin. Grasp the edges of the incised vein with mosquito hæmostats, which are allowed to lie on the arm.

After constricting the upper arm of the donor with a tourniquet or blood-pressure apparatus, gently introduce the cannula tip of the Kempton tube into the vein toward the hand and release the Crile clamp. Have the donor open and close the hand slowly in order to facilitate the flow of blood. When the tube is full, withdraw it quickly and turn it obliquely on its side with the cannula and side tube uppermost. Reclamp the donor's vein. Now introduce the cannula tip into the recipient's vein, toward the heart, remove the Crile clamp, and attach the cautery bulb to the side tube. If more than 250 c.c. of blood is removed,use fresh tubes for each transfer of blood. After each tube has been used it must be immediately rinsed in very hot water so as to soften the paraffin and remove blood-clots.

Vincent's tubes, which are similar to the Kempton-Brown tubes, have a cannula tip that is ground so as to fit into a hollow needle which is thrust into the vein directly through the skin.

Percy's tubes are designed to suck in sterile liquid paraffin which is lifted up by the blood as the latter enters the tube, thus protecting the blood from the air.

The Citrate Method.—Apply a tourniquet to the donor's arm, and, under aseptic precautions, puncture one of the larger veins in the flexure of the elbow with a cannula or aspirating needle of large calibre (a Schreiber sharp-pointed needle may be used). The needle should be introduced parallel with the surface of the skin, and after introduction should lie flat on the skin, showing that its point is free in the lumen of the vein. To make the veins more prominent have the patient slowly open and close the hand. Collect the blood in a graduated glass jar which contains a 2 per cent. solution of sodium citrate. Stir constantly with a glass rod. To transfuse 450 c.c. of blood, use 50 c.c. of the citrate solution, thus making a 2 per thousand mixture. One might add a few more c.c. of citrate solution in order to make sure that the proportion is no less than 2 per thousand. For every 50 c.c. of blood transfused use about 6 c.c. of citrate solution. Indeed,a dilution of 0.5 per cent. in 1000 c.c. of blocd is said to be non-toxic in adults (limit of safety is 75 grains), and prevents clotting better than a dilution of 0.2 per cent. The citrated blood may be preserved for two or three weeks or longer in a refrigerator.

As a rule, the recipient's vein, because of the anæmia present, must be exposed by a small incision. A cannula or needle is inserted which is attached to a glass funnel by means of rubber tubing (the whole containing about 20 or 30 c.c. of normal saline solution [0.85 per cent.] free from air bubbles). The citrated blood is then poured into the glass funnel and allowed to run into the vein by gravitation (chiefly after Lewisohn). The blood should be introduced at the rate of two ounces per minute so as not to overload the heart.

For infants, about 60 to 75 c.c. of mother's blood is approximately sufficient (Cherry and Langrock). The transfusion should be

repeated as required to keep the blood-pressure normal.

Bloody Stools.—See Hemorrhage, Intestinal.

Bone Diseases.—Achondroplasia, Acromegaly, Fragilitas Ossium, Leontiasis Ossea Neurotrophic Atrophy, Osteitis Deformans, Osteo-Arthropathy, Secondary Hypertrophic, Osteomalacia, Osteomyelitis, Oxycephaly, Recklinghausen's Disease: fibrous degeneration of bone, Rickets, Scurvy, Tuberculosis, (see Orthopedics, Part 10,) Tumors.

Bothriocephalus.—See Tapeworm Infection.

Botulism.—(L. *bot'ulus*, sausage.) Sausage or other food poisoning due to the anærobic bacillus botulinus. The characteristic symptoms are the expression of a central motor paralysis: strabismus, diplopia, ptosis, mydriasis, paralysis of accommodation, hoarseness, aphonia,or a barking cough, diminished secretion—buccal, pharyngeal, urinary—difficulty in swallowing; there is usually constipation, and often slight colicky pains and headache.

Treatment.—Treat the affection by early and complete evacuation, lavage, emesis, stimulation, etc., as described under "Poisoning." The specific antitoxic serum should be employed if procurable.

Boulimia.—See Bulimia.

Brachial Neuralgia.—See Neuralgia.

Brachial Plexus.—(L. *brach'ium*, from Gr. *βραχίων* arm; L. *plex'us* braid.)

See the chart, under Nerves, Peripheral, showing the distribution of sensory nerves in the skin.

Causes of Brachical Plexus Paralysis.—Obstetrical or birth traumatism to the new-born; other forms of traumatism; compression by tumors, abscess, or by a cervical rib; neuritis (*q.v.*).

The upper arm type of paralysis, affecting the deltoid, biceps, brachialis anticus, and supinator longus muscles, is characterized by feebleness or loss of the power of abduction and outward rotation of the arm, of flexion at the elbow, and of supination of the forearm, while electrical stimulation at a point in the neck "three centimetres lateral to the sternomastoid and the same distance above the clavicle," causes contraction of the paralyzed muscles. The upper arm hangs lifeless, and rotated inward, the forearm pronated, the palm looking outward; the forearm and hand are not paralyzed. This is the usual form of peripheral birth palsy.

In the lower arm type of paralysis the intrinsic muscles of the hand, and perhaps some of the muscles of the forearm, are affected, and there is some loss of sensation in the ring and little fingers and the ulnar side of the hand and forearm. If the sympathetic nerve is paralyzed there results a narrowing of the palpebral fissure and contraction of the pupil.

The presence of a cervical rib produces, in 5 to 10 per cent. of the cases, the following symptoms: pain and weakness in the shoulder and arm increased by use, sometimes swelling redness, heat, and numbness of the arm on exertion, simulating erythromelalgia, perhaps numbness, tingling, coldness, and loss of sensation on the ulnar border of the forearm and hand, and in the two ulnar fingers, perhaps paralysis, perhaps inequality of the radial pulses due to compression of the subclavian artery. The presence of a cervical rib is revealed by the X-ray; but syringomyelia and other nervous diseases should be excluded. The offending rib should be removed with great care so as not to injure further the brachial plexus.

The Long Thoracic Nerve.—This nerve supplies the serratus magnus muscle, paralysis of which is revealed by the occurrence of winged scapula on moveing the arm forward, and by difficulty in raising the arm above the horizontal.

Causes of Paralysis of the Long Thoracic Nerve.—Traumatism, including the carrying of heavy weights on the shoulder, forcible reaching of the arm over the head, and forcible contraction of the scalenus medius muscle; neuritis, due to exposure, or to infectious diseases, or to acute arthritis of the shoulder joint; progressive muscular atrophy; muscular dystrophy.

The Circumflex Nerve.—This nerve supplies the deltoid muscle. Its paralysis results in relaxation of the shoulder joint, wasting of the muscle, and inability to abduct and raise the arm.

Causes of Paralysis of the Circumflex Nerve.—Blow or fall on the shoulder; long lying upon the shoulder; pressure of a crutch; dislocation or fracture of the humerus; neuritis, due to exposure, infectious diseases, plumbism, diabetes, arthritis, axillary disease.

The Musculo-Spiral or Radial Nerve.—Paralysis of this nerve is manifested by wrist drop, and, perhaps, inability to supinate the forearm when extended.

Causes of Musculo-Spiral or Radial Nerve Paralysis.—Dislocation or fracture of the upper end of the humerus; callus incarceration; sleeping upon the arm, or compression of the nerve during anæsthesia, or compression by an Esmarch's bandage, or by a crutch; injection of ether into the nerve; sudden violent contraction of the triceps muscle, as in an epileptic fit; multiple neuritis (*q.v.*); local neuritis (*q.v.*).

The Ulnar Nerve.—A lesion at or above

the elbo is characterized by feeble flexion of the hand, with radial deflection, hyper-extension of the wrist when the fingers are extended and loss of the movements of the little finger and of adduction and abduction of the fingers.

A lesion in the lower forearm is characterized by paralysis alone of the interossei and thumb muscles, resulting in a claw-like hand or *main en griffe*.

Causes of Ulnar Nerve Paralysis.—Dislocation or fracture of the humerus at the shoulder or elbow; callus incarceration; compression by a crutch; dislocation of the nerve at the elbow; pressure on the elbow during sleep; other forms of traumatism; traumatic or synovial elbow cysts; neuritis due to cold, syphilis, leprosy, etc. (See Neuritis.)

The Median Nerve.—A lesion above the elbow is characterized by difficulty in firmly grasping objects, inability to pronate the forearm and feeble flexion of the wrist and interphalangeal joints.

A lesion in the lower forearm results in loss of the thumb movements.

The Suprascapular Nerve.—This nerve supplies the infraspinatus muscle. Its paralysis is characterized by flattening of the infraspinous fossa, weakness of outward rotation of the humerus, and inability to carry weights upon the shoulder.

Causes of Suprascapular Paralysis.—Traumatism, including a fall on the shoulder, or upon the outstretched arm; local neuritis due to cold.

The Musculocutaneous Nerve.—This nerve supplies the biceps, coracobrachialis, and brachialis anticus muscles, and its paralysis is characterized by inability to flex the forearm when supinated.

The chief causes of musculocutaneous paralysis are: a blow on or compression of the arm; and fracture or dislocation of the humerus.

Treatment of Nerve Lesions.—Consider the cause. In open wounds, accurately approximate and suture divided nerves.

During acute symptoms keep the arm at rest. After all acute symptoms have subsided (about a month) practice energetic massage of the affected muscles at least twice daily, passive and active movements of the joints, and electrical stimulation of the paralyzed muscles, using a mild faradic current for ten minutes daily, if effectual in exciting a response (prognosis then good), otherwise the mild galvanic current (see Med. Elect.).

Guard against contractures by means of splints. Employ a dorsal splint, with full extension of the wrist and fingers, in paralysis of the extensor muscles. In paralysis of the flexors of the forearm support the forearm in flexion in a sling.

In birth palsy, examine also for dislocation of the shoulder. As long as pain persists (about a month) keep the limb at rest, with the fingers extended upon the chest, beneath the clothing. Thereafter massage the muscles several times daily and employ passive movements of the shoulder, elbow, wrist and fingers to the limit of their mobility, in the intervals keeping the arm slung as before. It is essential that the head of the humerus be kept in place (see Congenital Dislocation of the Shoulder, in Whitman's Orthopedic Surgery). If no marked improvement in the paralysis appears within nine months, dissect out the injured nerves, excise the injured parts, and suture the cut ends (see Whitman's Orthopedic Surgery).

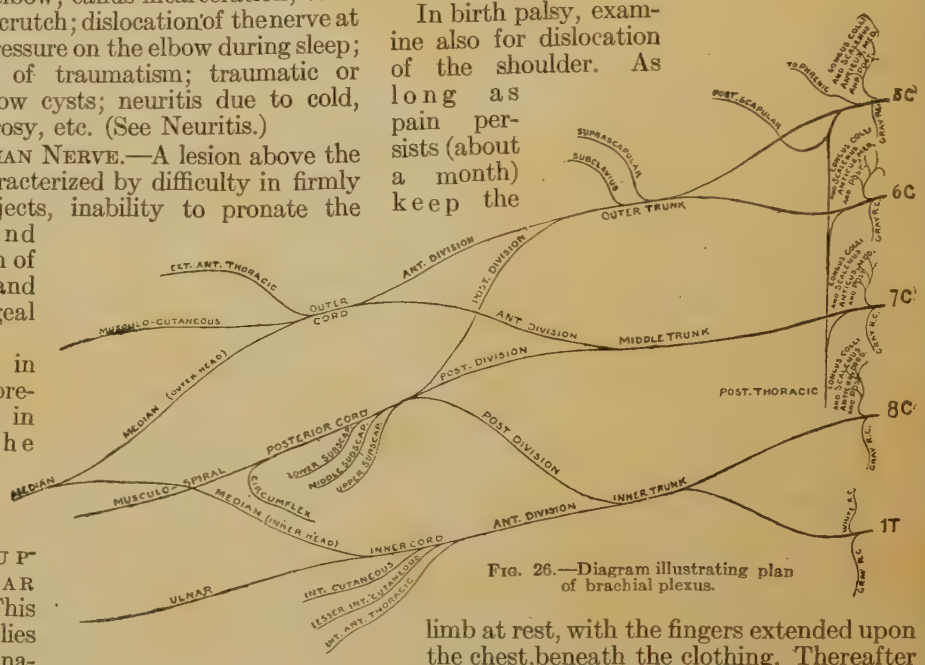
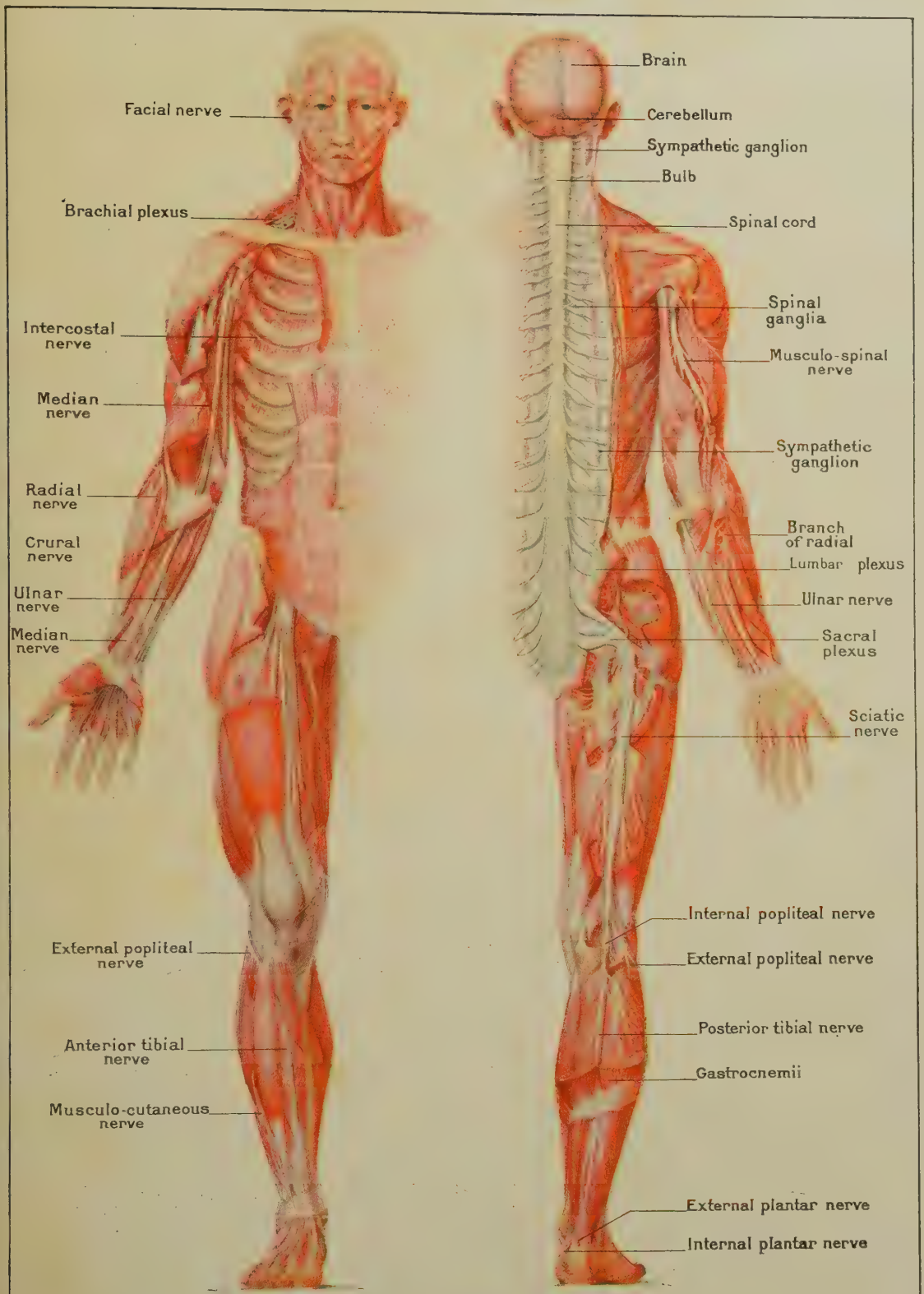


Fig. 26.—Diagram illustrating plan of brachial plexus.

Bradycardia, Slow Heart.—Gr. *βραδύς* slow + *καρδία* heart.

Etiology.—Hunger; rest after athletic exercise; pain; vomiting; puerperium; exhaustion; excessive sexual indulgence; senility; convalescence from acute fevers, especially typhoid fever, pneumonia, rheumatic fever, and diphtheria; toxic agents: alcohol, tobacco, coffee, kigitalis, lead, muscarin, picric acid, physostigmine, uræmic poisons, gastro-intestinal toxines; anæmia; jaundice; diabetes; nephri-



LAROUSSE MÉDICAL

Brain, spinal cord, and nerves.

tis; hypothyroidism; coronary sclerosis and chronic myocarditis; increased intracardiac pressure in dilatation of the heart; emphysema; pericarditis; gastro-intestinal diseases—chronic dyspepsia, gastric ulcer, gastric cancer; increased intracranial pressure—apoplexy, brain tumor, brain abscess, concussion of the brain, meningitis; diseases and injuries of the cervical cord or medulla—syringomyelia, tabes dorsalis, combined system disease, tumors, hemorrhage, vertebral disease causing compression of the cord; epilepsy; general paresis; melancholia; mania; sunstroke; hysteria; neurasthenia; pressure of tuberculous mediastinal glands upon the vagus, reflex vagus stimulation through the abdominal sympathetic system; hemorrhage or tumors in the vagus sheath; vagus neuritis in miltiple neuritis (plumbism, diabetes, acute infections, particularly diphtheria and influenza); affections of the skin and sexual organs; heart block (*q.v.*).

A slow pulse—50 to the minute—may be normal to the individual. Extracardiac bradycardia (nervous—due to vagus irritation) may be distinguished from intracardiac bradycardia by means of atropine, amyl nitrite, and pressure on the eyeball. If the bradycardia is nervous in origin, the administration of atropine in physiological doses will quicken the heart. In heart block atropine increases only the auricular rate, not the ventricular. Pressure on the eyeball, especially the right, slows the heart only when the bradycardia is of nervous origin. "The test is positive when the lowering of the pulse is five pulsations a minute or more." (Petzetakis.)

The Treatment of bradycardia is causal.

Brain Abscess.—**Symptomatology.**—Headache, dizziness, drowsiness, torpor, nausea and vomiting, slowing of the pulse and respirations, slightly elevated, normal, or subnormal temperature, sometimes chills, choked optic discs, stupor, paralysis, convulsions. A long latent period of weeks or months may precede the appearance of frank symptoms. (See Brain Localization.)

Etiology.—Otitis media and mastoiditis (abscess extradural or in the temporal lobe or cerebellum); sinusitis (abscess extradural or in the frontal lobe); trauma to the head; pulmonary purulent processes, *e.g.*,—bronchiectasis, putrid bronchitis, abscess, gangrene, empyema; a purulent focus anywhere in the body, *e.g.*—phlegmon, erysipelas, septicopyemia, ulcerative endocarditis, osteomyelitis, liver abscess, etc.; infectious fevers.

Treatment.—Enjoin absolute rest and quiet. Open the bowels thoroughly. Apply an ice-cap to the head. For restlessness and pain prescribe the bromides, gr. xx-xxx, well diluted 3 or 4 times a day; or phenacetine, gr. x once or twice, as required, or morphine, gr. $\frac{1}{8}$–$\frac{1}{4}$.

Administer hexamethylenamine (urotropin), gr. x-xv, t.i.d., for the prevention of diffuse meningitis, since the drug liberates formaldehyde in the cerebrospinal fluid.

Operate; expose, evacuate, and drain the abscess freely.

Brain Concussion, Contusion, and Compression.—See Concussion, Contusion, and Compression of the Brain.

Brain Localization.—**The Motor Tract.**—The motor tract arises from cerebral cortical cells in the posterior part of the third frontal convolution, the anterior central convolution and the paracentral lobule (Fig. 27). Beneath the cortex, in the centrum ovale, the axone fibres converge in the shape of a fan and collect together to enter the internal capsule (Fig. 28). Hence they traverse the middle third of each crus cerebri, then the pons, and thence the medulla, where, in the pyramids, they decussate for the most part and enter the crossed pyramidal tracts of the spinal cord, while some fibres continue directly into the anterior median columns of the cord (Fig. 28). At various levels in the cord the fibres and their collaterals given off at right angles to their course terminate about the cells of the anterior horns, whence axones issue into the anterior roots and thence to the body musculature. In the base of the brain fibres are given off in like manner to the motor nuclei of the cranial nerves.

Irritative lesions in the motor areas produce muscular twitchings, spasms or convulsions (called Jacksonian epilepsy when localized); and the part first involved in the spasm points to the location of the lesion in the brain. Sometimes an irritation starting outside the motor area may extend to the latter and set up a spasm; and this should be borne in mind in the localization of the source of irritation. In such cases other localizing signs (sensory, hallucinatory, aphasic, etc.) may be present. A spasmodic, jerky movement of the head and eyes or of the eyes alone to the right indicates irritation of the posterior part of the second left frontal convolution; such movements to the left indicate irritation in the same region on the right side. (Starr.)

Destructive lesions in the motor areas produce paralysis. In cortical and subcortical lesions the paralysis is usually of limited extent—a monoplegia, *i.e.*, paralysis of the face alone, (on the opposite side), or arm alone, or face and arm, or leg alone, or arm and leg together. If both paracentral lobules at the top of the brain are affected, as in war wounds, there results a double crural monoplegia (a true cortical paraplegia). A lesion in the internal capsule produces hemi-

plegia on the opposite side. A lesion in the crus cerebri produces hemiplegia on the opposite side and oculomotor palsy on the same side. A lesion in the pons causes paralysis of the fifth, sixth, seventh, or eight nerves on the side of the lesion and hemiplegia on the opposite side. A lesion in the medulla causes paralysis of the ninth, tenth, eleventh, or twelfth nerves on the side of the lesion and hemiplegia on the opposite side. Tumors of the pons usually produce loss of knee-jerk and often weakened control of the bladder and rectum. Immediately following a cerebral wound involving the motor area the resulting paralysis is flaccid, with diminished or absent reflexes, and spasticity and contracture do not appear for several weeks.

The Sensory Tract. — The sensory axones of the posterior columns of the spinal cord terminate in arborizations about the dendrites of cells situated in the nuclei gracilis and cuneatus of the medulla, whence a second set of axones decussate and pass upward in the opposite interolivary tract which lies internal to the hypoglossal nerve. The interolivary tract passes over into the lemniscus which traverses the pons behind the motor or pyramidal tracts and deep transverse fibres, and then ascends through the crus cerebri, thence the lower part of the internal capsule, and terminates largely in the outer nucleus of the optic thalamus and partly in the posterior central convolution and adjacent parietal region of the cortex. In the pons many axones enter the gray matter and terminate about neurones on the floor of the ventricle, in the formatio reticularis, and in the deep gray matter, whence second axones again nter the lemniscus to ascend. In the crus cerebri many of the lemniscus axones enter the anterior and posterior corpora quadrigemina.

The leminiscus is the tract of muscular sense, and when it is diseased, hemiataxia results. Hemiataxia associated with oculomotor palsy indicates a lesion in the crus. Hemiataxia associated with trigeminal anæsthesia or facial palsy indicates a lesion in the pons. Hemiataxia associated with auditory or hypoglossal paralysis indicates a lesion in the medulla.

The antero-lateral columns of the spinal cord, which transmit tactile, pain and temperature sensations, pass directly over into the formatio reticularis of the medulla, pons and crus, and thence into the internal capsule (behind the motor tract) or the optic thalamus to the sensory cortex, except the ascends ing tract of Gowers, which ends in the vermis of the cerebellum. The formatio reticularis contains, beside the sensory tract, transverse commissural fibres of the medulla, pons and cerebellum, cranial nerve fibres, and the nucleus ambiguus, superior olive, nuclei of the lemniscus, and the red nucleus, which are collections of neurone bodies.

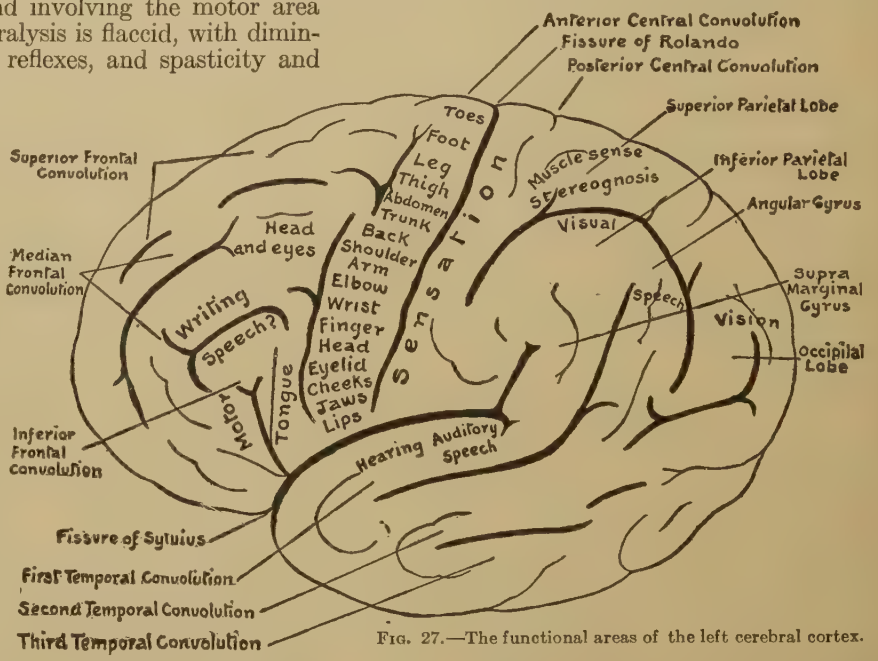


Fig. 27.—The functional areas of the left cerebral cortex.

A lesion in the formation reticularis in the upper third of the pons, or in the crus cerebri, or in the internal capsule, produces a hemianæsthesia. A lesion lower in the pons or in the medulla produces an alternating anæsthesia, *i.e.*, facial anæsthesia on the side of the lesion and anæsthesia of the opposite side of the body.

A lesion of the red nucleus produces incoördination and paralysis of the third nerve.

The direct cerebellar tract of the spinal cord, which transmits muscular sensations whereby equilibrium is maintained, enters, in the medulla, the restiform body, and thence turns outward into the cerebellum. It

is joined in the corpus restiforme by some fibres from the nuclei gracilis and cuneatus of each side and also by fibres from the opposite

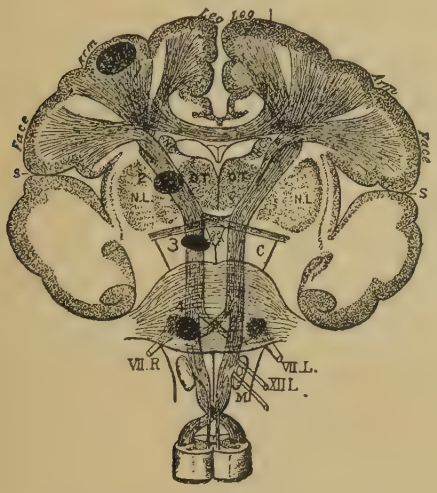


FIG. 28.—Scheme of the motor tract to show the effect of lesions at different positions. 1, Cortical or subcortical lesion, causing monoplegia of left arm; 2, capsular lesion, causing hemiplegia; 3, crus lesion, causing left hemiplegia and right third nerve palsy; 4, pons lesion, causing alternating paralysis of right face and left arm and leg; s. sylvian fissure; O.T., optic thalamus; N.L., lenticular nucleus; C, crus; N.C., candate nucleus; VII, facial nerve; M, medulla. *Starr's Nervous Diseases*, Lea & Febiger.

olivary body. A lesion in this tract results in vertigo and staggering.

Irritative lesions in the sensory areas produce paræsthesiæ, hallucinations, or pain; destructive lesions produce anæsthesia.

A lesion in the superior parietal convolution causes astereognosis or loss of the power of recognizing objects by touch.

The Visual Tract.—The optic nerves (Fig. 29) meet at the optic chiasm where a partial decussation occurs. The optic tracts end each in the pulvinar of the optic thalamus, in the external geniculate body, and in the anterior quadrigeminal body, from which ganglia new axones pass out into the posterior fifth of the internal capsule, and thence through the centrum ovale, outside of the posterior horn of the lateral ventricle, to the cortex of the occipital lobe about the calcarine fissure and in the cuneus.

As is evident from Fig. 29, cerebral blindness is always a bilateral hemianopsia.

The memory of the meaning of things seen, or, in other words, the recognition of objects seen, is stored in the occipital cortex; and the loss of this memory is called psychical blindness. It is attended by hemianopsia when the cuneus is involved.

The memory of the meaning of words seen, or the power of understanding written language, is stored in the angular gyrus, and its loss is called word blindness.

Visual hallucinations or auræ have their seat in the occipital cortex.

In cortical hemianopsia the inner limiting line of blindness is usually vertical and very near the point of central vision; whereas, in subcortical or basal ganglia hemianopsia the latter is usually less extensive and less symmetrical in the two eyes and extends farther outside the point of central vision.

A lesion of the visual tract just beneath the cortex usually produces word blindness as well as hemianopsia.

A lesion in the region of the internal capsule or optic thalamus generally produces hemiataxia, or hemianæsthesia, or hemiplegia, as well as hemianopsia.

A lesion in the external geniculate body involves the fibres of the corpora quadrigemina with the resulting association of Wernicke's hemiopic pupillary reflex with hemianopsia. Wernicke's reflex is elicited as follows: In a dark room, with the eyes only faintly illuminated in order to obtain dilatation of the pupils, throw a ray of light, by means of a mirror, only upon the blind side of the retina. If no pupillary contraction results, the lesion is in the optic tract or basal ganglia (the reflex arc of pupillary response to light).

A lesion limited to the corpora quadrigemina produces strabismus, double vision (oculomotor palsy), nystagmus and loss of the pupillary reflex, dizziness and staggering (from involvement of the underlying red nuclei), but no hemianopsia.

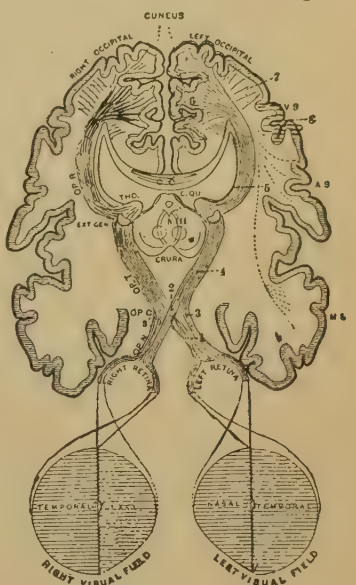


FIG. 29.—Diagram of visual paths (From Vialet, modified.) OP. N., optic nerve. OP. C., optic chiasm. OP. T., optic tract. OP. R., optic radiations. Ext. GE. N., external geniculate body. TH. O., optic thalamus. C. QU., corpora quadrigemina. C. C., corpus callosum. V. S., visual speech center. A. S., auditory speech center. M. S., motor speech center. A lesion at 1 causes blindness of that eye; at 2, bitemporal hemianopia; at 3, nasal hemianopia. Symmetrical lesions at 3 and 3' would cause bi-nasal hemianopia; at 4, hemianopia of both eyes, with hemianopic pupillary inaction; at 5 and 6, hemianopia of both eyes, pupillary reflexes normal; at 7, amblyopia, especially of opposite eye; at 8, on left side, word-blindness.

A lesion of the optic tract produces hemianopsia associated with Wernicke's hemiopic pupillary reflex, and, owing to the proximity

of the crus, also, often, hemiplegia and oculomotor palsy (ptosis, diplopia, etc.): see Oculomotor Paralysis.

A lesion in the optic chiasm causes partial or total blindness according to the situation and extent of the lesion, as may be seen by the diagram (Fig. 29). Consult Part 6, on Eye Diseases, for tests, etc.

The Auditory Tract.—The centre of hearing is located in the middle part of the first and second temporal convolutions. Since, however, each ear is connected with both temporal lobes through both lemnisci, cortical deafness does not occur unless both lobes or lemnisci are destroyed. Irritative lesions produce auditory hallucinations.

A lesion of the left temporal cortex (in right-handed persons) causes loss of memory of the meaning of words heard (word deafness) and of things heard (psychical deafness).

Smell.—The centre of smell is located in the uncinate gyrus and nucleus amygdalus which are situated in the apex of the temporal lobe.

The Frontal Lobes—A lesion of the frontal cortex and subjacent white matter is manifested by mental inertia, stupidity, loss of memory, lack of judgment, inattention, lack of self-control, and a tendency to somnolence. Emotional disturbances are produced by lesions in the frontal convolutions and in the anterior portion of the corpus callosum which unites the two frontal lobes. A lesion in the thalamus sometimes results in inability to smile on the side opposite to the lesion, although the risorii muscles are not paralyzed (Nothnagel). The thalamus is connected with the frontal lobe by means of a large association tract which traverses the anterior limb of the internal capsule and ends in the external nucleus of the thalamus.

The Mechanism of Language.—Aphasia (Gr. α priv. + $\phi\acute{\alpha}\sigma\iota\varsigma$ speech) is of two kinds, motor or expressive, and sensory or perceptive. Motor aphasia, in which the emissive speech faculty, concerned with articulation, writing, and pantomime, is deranged, may be cortical, subcortical, or intercortical. Cortical motor aphasia or Broca's aphasia has been thought to be due to a lesion in the posterior part of the third frontal convolution (Broca's centre) on the left side in right-handed persons, and vice versa. It is manifested by loss of the power of speech and usually of writing, but unaccompanied by a loss of understanding of spoken or written language. Subcortical motor aphasia is distinguished from cortical motor aphasia by the patient's ability to write and read, and to indicate by signs the number of syllables and letters in words seen and heard (Prout-Lichtheim test). He is incapable of articulate speech, but the memory pictures are not lost, as in cortical aphasia. Intercortical motor aphasia (paraphasia), involving the association tracts between Broca's centre and the sensory speech centres, is characterized by the inability to repeat words heard or seen, while understanding their meaning, and retaining, too, the power of enunciation. The patient can talk, because the motor centre and efferent tract are intact, but he continually misplaces words and talks jargon. "There are as many forms of paraphasia as there are association tracts." (Starr.) The temporobrocal intercortical tract lies beneath the island of Reil.

Sensory aphasia, in which the receptive speech faculty, concerned with the comprehension of the meaning of words, is deranged, may be cortical, subcortical, or intercortical. The auditory speech centre is located in the middle part of the cortex of the first and second temporal gyri, on the left side in right-handed persons, and vice versa, and a disturbance here causes auditory aphasia, or word-deafness, or loss of memory of the meaning of words heard. The visual speech centre is located in the angular gyrus, and a disturbance here causes visual aphasia, or word-blindness, or loss of memory of the meaning of words seen, or, in other words, loss of the power of understanding written language. A disturbance in the neighboring supramarginal gyrus causes mind-blindness, or loss of memory of the meaning of things or objects seen. In subcortical as distinguished from cortical aphasia, the memory picture is not lost, as it is in cortical aphasia, but is merely cut off from its ordinary connections with other memory pictures, and may be recalled by a roundabout path. Intercortical sensory aphasia, due to a lesion of the long association tract between the temporal and occipital lobes, is characterized by an inability to recall the name of an object seen and the appearance of an object named, while the name is recognized when heard and the object is recognized when seen.

In any given case of aphasia, the latter may, of course, be only partial, depending upon the extent of the local disturbance.

To test the motor speech centre and its association tracts, ascertain the patient's power of speaking voluntarily, and of repeating words seen or heard. To test the auditory speech centre and its association tracts, ascertain the patient's power of understanding the meaning of words spoken, and of naming things seen, heard, handled, tasted,

or smelled. To test the visual speech centre and its association tracts, ascertain the patient's power of understanding the meaning of words seen, of reading aloud, and of understanding what is read, of writing the names of things seen, heard, tasted, smelled, and handled, of copying and writing from dictation.

The above has been the accepted conception of the mechanism of speech, but Pierre Marie denies that the third frontal convolution is a speech centre, and contends that Broca's aphasia is so-called sensory aphasia (Wernicke's aphasia) plus anarthria or dysarthria, the latter being due to a lesion of the lenticular area of the brain, which includes the central gray nuclei, the internal and external capsules, the insula, the motor cortex, and some important fibres of the white matter, while the third frontal convolution is not included.

Other kinds of dysarthria besides the aphasic are (1) cerebellar dysarthria characterized by a "very deliberate, explosive, sometimes wandering or drawling method of speaking"; (2) bulbar dysarthria, due to nuclear paralysis, and "marked by amyotrophia and fibrillar tremors of the muscles innervated by the 7th and 12th pairs of nerves"; and (3) pseudo-bulbar dysarthria, occurring in lesions of the central gray nuclei or of the pons, and characterized by a "breathless, choking, nasal, muffled speech" (Chatelin and De Martel). A slow, difficult and indistinct speech occurs in Huntington's and in tetanoid chorea.

Etiology of Aphasia.—Transient aphasia may occur in epilepsy, migraine, arteriosclerosis (due probably to angiospasm), general paresis, chronic interstitial nephritis (due to local cerebral œdema), Raynaud's disease (due to angio-spasm), mental strain or shock, eye-strain, intestinal intoxication, poisoning by snake-bite, opium, cannabis indica, belladonna, etc.

More or less persistent aphasia may occur in infantile hemiplegia, cerebral tuberculosis, syphilis, abscess, hemorrhage, embolism, thrombosis, cyst, or tumor.

Treatment of Aphasia.—Consider the cause. Children can be reëducated much more easily than adults. Teach the aphasic language by means of the grammar and dictionary, taking him through the conjugation of verbs, the declension of nouns and pronouns, etc., just as one would teach language to a child, and using objects to illustrate names.

Apraxia or Dyspraxia (Gr. *α* neg., *δυs-* ill + *πράσσειν* to do) signifies the inability to perform certain voluntary movements, although there exists no motor or sensory paralysis or ataxia. The cause is possibly a lesion of the corpus callosum or posterior part of the frontal lobe, or possibly a lesion of the left parietal lobe. The treatment consists in the retraining of the limb for such acts as are lost or defective.

The Cerebellum.—The following phenomena characterize lesions of the cerebellum or its peduncles:

(1) Hypermetria (Gr. *ὑπὲρ* over + *μέτρον* measure), or exaggerated movements. With the finger or foot of the same side as the lesion the patient can not rapidly touch designated points on the body correctly, but over-reaches the mark. Closing the eyes does not increase this disorder, thus distinguishing it from ataxia. When told to make a dot on paper he over-shoots the mark, and finally makes a dash instead of a dot. When told to make a circle, he makes a polygon of broken outline (asynergia with hypermetria). An intentional oscillatory tremor of large amplitude, extending the full length of the limb, accompanies voluntary movements.

(2) Asynergia (Gr. *α* neg. + *συνεργία* coöperation), or loss of the power to synchronize or coördinate movements. When the patient is told to bend the trunk backwards as far as possible, he does not flex the knee and thigh as a normal subject does, and consequently loses his balance. When placed upon his back, with arms crossed on the chest, and told to raise the trunk, he can not do so, but raises only the leg a little on the affected side. (This phenomenon occurs also in hemiplegia.)

(3) Adiadococcinesia (Gr. *α* neg. + *διάδοχος* succeeding + *κίνησις* motion), or the inability to rapidly alternate certain voluntary movements, such as pronation and supination, on the same side as the lesion. Compare the two sides.

(4) Diminished tonicity (hypotonia) of certain groups of muscles which cause by their action movement in a certain direction, together with exaggerated tonicity of the opposing group of muscles, is produced by a localized lesion of the cerebellar cortex. If the whole cortex of one side is involved there results general hypotonia or asthenia on the side of the lesion, with loss of knee-jerk. The "rebound phenomenon" illustrates this defect. With the patient's elbows resting on the table, he is told to pull each hand in succession toward his mouth against resistance offered by the physician who holds his wrist. When the wrist is

suddenly let go, the hand of the affected side is jerked toward the mouth, while the hand on the unaffected side is restrained by contraction of the antagonist (triceps) muscle and may even rebound by the action of this muscle. With both arms extended horizontally in front, and the eyes then closed, the arm of the affected side moves away from the symmetrical position.

(5) Inclination of the head and trunk to the injured side on standing.

(6) Gait like that of a drunken man.

(7) Speech jerky, deliberate, explosive; sometimes slow and drawling.

(8) Vertigo.

(9) Sometimes nystagmus on fixing an object.

Lesions of the Vermis or median lobe give rise to vertigo, the cerebellar or drunken gait, abnormal positions of the head, slowness in the movements of the head and face, speech disturbance, and asynergia in the trunk and possibly the lower limbs.

Lesions of one hemisphere produce hemiasynergia, hemiadiadococcinesia, and hemihypermetria on the same side as the lesion.

Lesions localized in the cortex produce localized phenomena confined to one limb or one joint.

Lesions of the central gray cerebellar nuclei produce vertigo, lateropulsion, abnormal positions of the head and trunk, catalepsy, perhaps nystagmus.

A lesion in the middle cerebellar peduncle (crura cerebelli ad pontem) causes a tendency to turn or fall toward one side in walking and a tendency to a turning of the head, eyes, or body toward one side.

Labyrinthine lesions produce symptoms similar to those of cerebellar disease, *e.g.*, vertigo, lateropulsion (toward the affected side); but see Ear Diseases, Part 7, for diagnostic labyrinthine tests.

A lesion confined to a hemisphere of the cerebellum may produce no symptoms unless neighboring parts are pressed upon. Cerebellar disease is usually associated with pons and medulla symptoms. Tumors of the cerebello-pontine angle, which are not uncommon, may produce compression of the 5th, 6th, 7th, 8th, 9th, 10th, and 11th cranial nerves, compression of the cerebellar peduncles, or compression of the pons.

It should be remembered in connection with brain tumors, (1) that no focal symptoms may be present in tumors of the frontal and temporal lobes, especially on the right side, and (2) that focal symptoms may be produced indirectly by pressure exerted by a tumor at a distance.

Organic versus Functional (Hysterical) Paralysis.—In hysterical paralysis, the latter is generally partial, the reflexes are normal and equal on both sides, there is frequently anæsthesia of the paralyzed limb, and, if it is the leg that is paralyzed, the patient drags the limb, instead of scraping the ground with it. In organic paralysis, the latter is complete, the reflexes are diminished or exaggerated on the paralyzed side, Babinski's reflex and ankle clonus are present in upper-segment paralysis, in flaccid paralysis the paralyzed limb can be passively flexed to a greater degree than in functional paralysis, and the paralyzed hand placed in supination involuntarily assumes the position of pronation. In organic hemiplegia, if the patient is extended supine on a rigid couch, and told to cross the arms and attempt to sit up, the lower paralyzed limb will be seen to rise from the couch.

Brain Tumor.—**Varieties.** Glioma (commonest); endothelioma or fibro-sarcoma (next commonest—usually meningeal and enucleable, and owing to its usual occurrence in the cerebello-pontine recess, often associated with the early onset of auditory symptoms); sarcoma; carcinoma (both usually metastatic); tubercle; syphiloma; cholesteatoma; cysts. Dermoid, teratoma, lipoma, fibroma, psammoma, osteoma, enchondroma, neuroma, and angioma are all rare.

Symptomatology.—A. General Pressure Symptoms.—Headache; dizziness; drowsiness; torpor; nausea and vomiting; slowing of the pulse and respirations; psychic disturbances; choked disc (not an early sign; it usually appears first on the same side as the brain lesion, with "tortuosity of the retinal veins, injection of the disc and more or less haziness of its outlines, the nasal margins usually being the first to become obscured"; it is not associated in the beginning with diminution of vision; the latter usually indicates optic atrophy); dyschromatopsia (Gr. δυς ill + χρῶμα color + ὀ'ψις vision.: "interlacing and inversion of the color fields."—Cushing); dilated veins and venules of the eyelids and scalp; convulsions; coma; paralyses.

B. Focal Symptoms.—These are irritative (convulsive), or destructive (paralytic), or are absent. So-called "distant symptoms," due to distant œdema or to compression of one lobe by a tumor in another, may give false information regarding the location of the tumor. Auscultatory percussion of the shaved scalp may be of assistance, the "audibility of transmitted sound of a tuning fork being lessened over

the tumor" (Cushing). If psammomatous bodies or calcification are present, or if bone is eroded, the tumor may be localized by means of the X-ray (see Brain Localization).

Brain tumor should be distinguished from hysteria, general paresis, multiple sclerosis, cerebral arteriosclerosis, cerebral hemorrhage, embolism or thrombosis, cerebral aneurysms, brain abscess, nephritis, serous meningitis or ependymitis, hydrocephalus, hæmatoma of the dura mater, traumatic cysts, lead encephalopathy.

Prognosis.—Unless the tumor can be removed, it is usually fatal in six to twelve months after the appearance of pressure symptoms; but sometimes spontaneous cure occurs.

Treatment.—Eliminate syphilis by means of the Wassermann or Noguchi test. Cushing says: "In the presence or absence of a positive serum reaction or a definite history of lues, antisyphilitic treatment deserves only a brief vigorous trial; if pressure symptoms have been outspoken and do not become distinctly ameliorated (as shown chiefly by the appearance of the eye-grounds) in the course of a few days, a palliative decompression should be performed and the treatment subsequently resumed should the diagnosis remain in doubt." Mercury and potassium iodide, especially the latter in ascending large doses over an extended period, are sometimes very beneficial even in non-syphilitic tumors. Arsenic may also be of some value (for drugs see Part 11).

Keep the head elevated, and an ice-cap applied, and give daily morning salines, *e.g.*, Rochelle salt, ℥i–iv, or sodium phosphate ℥ss–iv, or liquor magnesii citratis, ℥vi–xx, or Epsom salt, ℥ii–viii, one hour before breakfast.

Give easily digestible food in frequent small amounts—about every three hours.

For severe headache, insomnia, convulsions, and vomiting, see these captions.

The tumor should be removed, if practicable. Precise localization in the early stages is now possible by means of cerebral pneumography.

Brain, Wet.—See Alcoholism.

Break-Bone Fever.—See Dengue.

Breast Cancer.—See Breast Enlargements.

Breast Enlargements.—Benign tumors are distinguished from malignant ones by the following opposite characteristics, *i.e.*, occurrence in the young, encapsulation, free movability, non-adherence to surrounding tissues, absence of retraction or dimpling of the skin, absence of atrophy of the overlying fat, absence of lymphatic involvement.

The removal of tissue for microscopic diagnosis is condemned by Ochsner. The decision to operate or not should rest upon the clinical diagnosis.

Classification.—I. Mastitis, pyogenic, tuberculous, syphilitic, actinomycotic. See Mastitis.

2. Simple Hypertrophy. *a. Virginal*—gradually progressive and eventually requiring removal. *b. Gestational*—usually disappearing at the termination of pregnancy.

3. Galactocele or Milk Retention Cyst.—Excise the cyst.

4. Senile Cyst.—Usually multiple and bilateral, occurring usually between the ages of forty and fifty, and possessing a tendency to malignant degeneration, therefore the advisability of removing the whole breast.

5. Cyst with Intracystic Papilloma.—Characterized by a discharge from the nipple and showing a tendency toward malignancy. Remove the entire breast. If the base of the papilloma is indurated, and the surrounding tissues infiltrated, do the radical cancer operation.

6. Intracanalicular Myxoma.—Occurs in young women; is elastic, nodulated, often multiple, and of slow growth. Excision of the tumor is advised by some.

7. Angioma.—Excise the growth.

8. Lipoma.—Circumscribed, soft, lobulated; very rare. Excise the tumor.

9. Fibroadenoma or Adenofibroma.—Occurs in young women, is smooth, firm, elastic; usually single. Excise the tumor.

10. Cystic Adenoma. — Rare, occurs in young women, is hard and lobulated, no discharge from nipple. Excise the tumor.

11. Dermoid Cyst.—Very rare. Excise the growth.

12. Sarcoma.—Rare, clinically benign at first, the axillary glands are rarely involved. Remove the breast; but if there is the slightest doubt as to involvement of the lymph glands, do the radical operation.

13. Carcinoma.—Common, occurs usually between the ages of 40 and 60; signs of malignancy: diffuse growth, adherence to the surrounding tissues, dimpling of the skin, retraction of the nipple, atrophy of the overlying fat, enlargement of the axillary lymphatic glands, age of the patient. As a result of compression of the blood vessels in cancer, if the overlying skin is rubbed with alcohol and ether, it shows irregular pale areas, whereas in non-cancerous growths the rubbed skin is uniformly red (Moszkowicz). Do the radical operation. In recurrent or inoperable cases employ

radium (*q.v.*) or the X-rays (*q.v.*) or both. Radium tubes may be inserted directly into the substance of the growth. Remember that Paget's disease of the nipple, manifested by a yellow secretion from the nipple, followed by eczema and ulceration, is malignant cancer beginning in the milk duct.

Breast Inflammation.—See Mastitis

Neuralgia.—See Mastodynia under Neuralgia.

Pang.—See Angina Pectoris.

Tumors.—See Breast Enlargements.

Breath, Bad or Offensive; Fetor Oris.—(L. *Fet'or*, stench; *os*, gen. *o'ris*, mouth).

Causes.—Uncleanliness; pyorrhœa alveolaris; dental caries; poorly fitting artificial devices; mouth breathing; adenoids; stomatitis; indigestion; constipation; putrid plugs in the tonsillar crypts; tonsillitis; nasopharyngitis; ozœna; antral empyema; scurvy; chlorosis; diabetes; acidosis (fruity odor of acetone); ammoniacal cystitis; menstrual disorders; acute febrile diseases; diphtheria; septicæmia; hepatic cirrhosis; uræmia; œsophageal diverticulum; dilatation of the stomach; carcinoma of the larynx; putrid bronchitis; bronchiectasis; pulmonary abscess; pulmonary gangrene; tuberculous pulmonary cavities; hæmoptysis; alcoholism; arsenic; phosporus; bromides; iodides.

Treatment.—Correct the cause.

℞ Beta-naphthol..... gr. iii
Sodii biboratis..... ℥i
Aquæ menthæ piperitæ..... ℥v
Aquæ destillatæ, q.s. ad..... Oii
Sig.—Mouth-wash.—Ortner; Croftan.

℞ Formalini..... ℥iiss
Mentholis..... gr. xv
Tincturæ Krameriæ..... ℥iiiixv
Alcoholis, q.s. ad ..... ℥iii ℥ii
M. Sig.—One-half to one teaspoonful in a quarter of a glass of water, as a mouth-wash. (Ortner.)

℞ Thymol..... gr. vss
Acidi benzoici ..... gr xlv
Olei menthæ piperitæ..... ℥xx
Olei eucalypti..... ℥xlv
Alcoholis..... ℥iii ℥ii
M. Sig.—A dessertspoonful in half a wineglassful of water, as a mouth-wash.

Breathlessness.—See Dyspnœa.

Bright's Disease; Nephritis.—Gr. *νεφρός* kidney + *-ιτις* inflammation.

1. Acute Bright's Disease; Acute Diffuse Nephritis.—Acute diffuse nephritis is characterized usually by the sudden appearance of œdema, pallor, scanty urine of high specific gravity, containing blood, tube casts and albumen, and, perhaps, headache, mental apathy, lumbar pains, slight fever, nausea and vomiting. In some cases, however, the urinary changes are the most prominent feature. See Urinalysis.

Differentiate acute nephritis from albuminuria due to other causes (see Albuminuria, Metabolism), from an acute exacerbation of a chronic nephritis and from chronic parenchymatous or chronic diffuse nephritis.

Prognosis.—Recovery usually occurs, even, sometimes, after a year's illness, but the disease is nevertheless serious.

Etiology.—Overeating; highly seasoned food; traumatism, including operations on the kidney; exposure to cold and wet; prolonged X-ray exposures; extensive burns and skin diseases; pregnancy; chemical poisons, *e.g.*, cantharides, turpentine, balsam of pine, carbolic acid, potassium chlorate, salicylates, cubebs, copaiba, antimony, potassium nitrate, hydrochloric acid, nitric acid, sulphuric acid, oxalic acid, potassium bichromate, alcohol, chloroform, phosphorus, uranium salts, arsenic, mercury, lead, oil of mustard, morphine, vinylamin, cobra venom, poisonous mushrooms, tartrates, ptomaines, sodium chloride in large doses, skin applications of iodoform, pyrogallic acid, naphthol, tar preparations, and the other drugs enumerated; infectious diseases and focal infections, *e.g.*, scarlet fever, diphtheria, syphilis, acute tuberculosis, influenza, septico-pyemia, smallpox, malaria, typhus fever, tonsillitis, sinusitis, purpura, rarely measles, German measles, varicella, whooping-cough, mumps, meningitis, typhoid fever, vaccinia, pneumonia, empyema, acute diarrhœal diseases, cholera, yellow fever, relapsing fever, rheumatic fever, chorea, erysipelas; acute yellow atrophy of the liver.

Treatment.—Put the patient to bed, and keep him there until the heart is normal and the urine free from albumin. Should the confinement eventually become too irksome, allow him up occasionally. Von Noorden allows the patient up after two weeks of absence of red cells and kidney epithelium from the urine, whether albuminuria is present or not, providing, of course, no other symptoms of nephritis are present. The room should be warm but well ventilated; draughts should be avoided. A flannel gown should be worn next the skin, and the patient should sleep between flannel or woolen blankets. The diet should be light, bland, and easily digestible, and low in protein, in order to lessen the work of the kidneys (moreover nitrogen retention exists with its consequent dangers). Salt should also be reduced to a minimum, especially in the presence of œdema, since its retention in the tissues (the retention being due to

renal insufficiency) promotes œdema by raising the osmotic pressure. In the beginning, give barley water with a little milk, fruit juices, and sugar, later increasing the proportion of milk as the patient improves, until he is taking one and a half quarts (if taken alone) or less a day, diluted if need be. Yeo adds one to two tablespoonfuls of the following alkaline solution to each cup of milk and water:

℞ Sodii bicarbonatis,
Potassii citratis..... āā gr. x
Aquam destillatam, ad..... ʒi

Ortner gives 1½ to 2 drams of sodium bicarbonate a day, to render the urine less acid, and therefore less irritating.

Other allowable foods are: buttermilk, in small amounts at a time, 4 to 6 pints in twenty-four hours, kumyss (see Part 11), kefir whey, well-cooked cereals—oatmeal, barley, rice, farina, arrowroot, sago, tapioca, macaroni, apple sauce, baked apple, orange, grape fruit, prunes. Prohibit meat, eggs, broths, meat extracts, alcohol.

After the acute stage of the disease is passed, and urine is secreting freely, add to the dietary junket, custard, cream, lettuce, celery, water cress, mashed potatoes, green peas, string beans, stale bread, butter, toast, salt-free crackers, zwieback; and later, as the albuminuria diminishes, eggs boiled three minutes, fish, vegetables, and meat in small quantities only if it is craved.

Some advise only moderate amounts of water, according to the patient's thirst; Osler, Yeo, and Holt favor, except in the presence of oliguria and œdema, an abundance of water for the purpose of flushing the kidneys: cream of tartar lemonade, one teaspoonful of cream of tartar to the pint of boiling water, cooled and flavored with lemon and sugar (both diuretic and laxative); alkaline mineral waters, *e.g.*, Waukesha (Wis.) and Poland, (Me.).

The following prescription is a useful diaphoretic fever mixture:

℞ Spiritus ætheris nitrosi..... ♏xxx
Liquoris ammonii acetatis... ʒii–iv
Syrupi simplicis,
Aquæ camphoræ, q.s. ad.... ʒi
M. Sig.—One ounce (two tablespoonfuls) in water three or four times a day.

The free use of diuretics is condemned; but digitalis, diuretin, theophyllin, and caffeine (no more than gr. ix daily) may be of service in moderate doses when the heart is weak and the blood-pressure low, if not continued over a day or two at a time (for drug formulæ, etc., see Part 11).

There should be one or two loose bowel movements daily. To this end employ Rochelle salt, Epsom salt, or sodium phosphate, ʒi–iv of anyone dissolved in water, one hour before breakfast; or the laxative mineral waters—Hunjadi, Rubinat, Carlsbad, etc., before meals. Fluid magnesia is useful for children. If necessary, calomel, cascara, senna, or the compound laxative pill may be given at bedtime.

For lumbar pain and for hæmaturia employ the hot water bag, or the Paquelin cautery, or a mustard poultice, or hot linseed poultices frequently changed, or dry cupping, or wet cupping. A dry cup is applied as follows: a tumbler is swabbed quickly with alcohol, the edges wiped dry the alcohol ignited and allowed to burn for a few moments, and the cup then quickly applied.

For vomiting, withhold all food, give small pieces of ice to suck, apply an ice-bag or mustard poultice to the epigastrium, and, if need be, administer some one of the remedies enumerated under Vomiting. Rectal feeding (*q.v.*) may be instituted.

For dyspnoea, tap serous transudations, if causative; give digitalis, or strophanthin for cardiac dyspnoea. Morphine is very useful.

For dropsy and scanty urine, restrict fluids to a minimum, apply dry cups over the loins, and administer cathartics, *viz.*, compound jalap powder, gr. xx–ʒi–ii, in a little water, once or twice a day, followed by salines; or elaterium, gr. 1/8–1/4, two to three times a day; or elaterin, gr. 1/20–1/10, two to three times a day; or croton oil, gtt. i–ii, in olive oil. If the purgative causes griping, give extract of hyoscyamus, gr. 1/8–1/4. In the presence of acidosis give alkalies intravenously (*q.v.*).

Diaphoresis may be promoted once or twice daily, or less often, as required, by means of hot air conducted beneath the elevated blankets through a stove pipe, or by means of electric light bulbs placed beneath the blankets, or hot wet packs, or hot bricks covered with wet towels sprinkled with alcohol, or hot or lukewarm tub baths with cold cloths to the head, followed by a rubdown and a warm bed. Be careful in employing the hot tub bath, as it may weaken the patient. The sweating should be continued for from twenty minutes to one hour, during which copious hot drinks should be given, and, perhaps a diaphoretic (see above prescription). An ice-cap should be kept to the head. If the patient does not sweat, give pilocarpine, gr. 1/8–1/6, to adults, gr. 1/20–1/12 to children of from two to

ten years, hypodermically, unless the heart is weak. Watch the pulse closely during the sweat, and give stimulants if required, *e.g.*, camphor, gr. i-ii, in olive oil or in ether, ♏xv–xxx hypodermically; or caffeine sodiosalicylate gr. ¼–½, hypodermically; or digitalin, hypodermically. After the sweat, rub the patient dry and cover with woolen blankets.

Hot rectal irrigations with normal saline solution (one teaspoonful to the pint), for ten to fifteen minutes, through a two-way tube, such as Kemp's, or Tuttle's, or Martin's, with the buttocks slightly elevated, are of value.

Treat intractable ascites and pleural effusions by paracentesis, as described under Ascites and Pleurisy. If the legs are excessively œdematous, they may be drained by means of a fine aspirator needle connected with rubber tubing.

Scarification by means of the mirror and laryngeal lancet, or tracheotomy (*q.v.*) is sometimes required for œdema of the larynx.

See Pulmonary Œdema for its treatment.

Should uræmic symptoms (headache, drowsiness, muscular twitching, convulsions, etc., see Uræmia) occur, purge and sweat the patient, apply dry cups followed by hot, frequently changed linseed poultices to the loins, give rectal irrigations of hot normal saline solution, and, if the patient is a robust man, withdraw twenty ounces of blood (three to six ounces in a five-year-old child), and replace it with twice the amount of normal saline solution (0.9 per cent).

Nitroglycerine, gr. $\frac{1}{100}$–$\frac{1}{50}$, every fifteen to thirty minutes until effectual (gr. $\frac{1}{200}$ every hour for five or six doses, or until effectual, for a child of five years, see Part 11); or tincture of aconite, ♏i–ii, every hour until effectual, is also recommended where the arterial tension is high. In children with a temperature of 102° or more, with a hot dry skin, aconite is very useful: three years—gtt. ss every two hours; older children, gtt. i.

For restlessness, insomnia, and headache, employ, as required, the bromides or chloral or paraldehyde or trional or even morphine. (See Part 11.)

For convulsions give, per rectum, chloral, gr. xx, and bromide, gr. xl well diluted; and chloroform inhalations (under three years, chloral, gr. ii–iii, sod. bromide, gr. viii, every four to six hours; after three years, chloral gr. iii, sod. bromide, gr. viii–xv. (Kerley.)

In impending uræmia, restrict the diet to nothing else than one quart or litre of milk containing one-quarter part of lime water a day.

As the kidney function improves, more and more water may be allowed, with, perhaps, diuretics—potassium citrate or acetate, gr. x–xxx every two hours or so; or cream of tartar lemonade freely until looseness of the bowels results.

Kügelgen advocates, in anuria or uræmia, decapsulation of the kidney, or nephrotomy, for the purpose of relieving congestion and tension.

During convalescence keep the patient warmly clad and protected against cold. For anæmia give Basham's mixture, freshly prepared, ʒii–iv, well diluted in water, three or four times daily after meals; or Blaud's mass; for children, the syrup of the iodide or phosphate of iron. Iron should not be prescribed until after the acute symptoms have subsided.

At this stage, if the appetite is poor, tincture of nux vomica, and dilute hydrochloric acid, may be prescribed before meals.

Caution the patient against chill, and advise him to wear a flannel protector about the loins.

The malarial and syphilitic nephritides require specific treatment.

II. Chronic Bright's Diseases. *A. Chronic Parenchymatous or Chronic Diffuse Nephritis.*—This type of chronic nephritis is characterized by a slow, insidious onset (unless it follows acute nephritis) and the following manifestations: marked dropsy, anæmia, indigestion, frequently diarrhœa, commonly uræmic symptoms (malaise, headache, sleeplessness, vomiting, etc., see Uræmia), and the following urinary changes, viz.—diminished quantity, normal or high specific gravity, acidity, dark color, often turbidity, abundant sediment on standing, abundance of albumin and casts. (See Urinalysis and Metabolism.)

Prognosis.—Death usually occurs in "from six to eighteen months," unless the secondary contracted kidney (chronic interstitial nephritis) should develop, in which event life may be prolonged sometimes for several years. Recovery occasionally occurs in children even after the disease has persisted for two years. (Osler.)

Etiology.—Acute nephritis (*q.v.*); habitual exposure to cold and damp; acute infectious diseases; chronic infection through the tonsils, teeth, sinuses, gall-bladder, etc.; syphilis; tuberculosis; suppuration; malaria; alcoholism; diabetes; chronic passive congestion in heart disease; plumbism; mercury poisoning.

Treatment.—Acute exacerbations should be treated the same as acute nephritis, with rest in bed, etc.; otherwise, except in the presence of uræmia or marked dropsy, the

patient is allowed up. The diet should consist of milk with lime water, one-fourth part, or Yeo's alkaline solution (see under Bright's Disease, Acute) added, buttermilk, well-cooked cereals, fresh bland vegetables—peas, beans, potatoes, carrots, turnips, cauliflower, squash, lettuce, celery; olive oil, cream, butter, bread, fruit, oysters, fresh fish, eggs, and meat sparingly. Interdict liver, kidney, sweatbread, rumpsteak, meat extracts, soups, broths, tea, coffee, alcohol. Reduce salt to a minimum. Reduce proteins whenever the albuminuria is increased, and dyspnœa, headache, and general discomfort occur. Allow water freely only when it is excreted freely and there is no dropsy. The patient should be warmly clad, wear woolen underclothing and a flannel band over the loins, keep his feet dry and warm, and should reside, if practicable, in a warm, dry, equable climate, such as that of Southern California, Northern Florida, Egypt, or Algiers. The bowels should be kept active. A hot bath followed by a rubdown should be taken three or four times a week. For anæmia, give iron as in acute nephritis.

For oliguria and dropsy, employ catharsis and diaphoresis as in acute nephritis (*q.v.*). In the absence of acute inflammation diuretics are commonly prescribed: digitalis (infusion, ℥ii–iv; tincture, ♏v–xx; fluid extract, ♏i–iv), well diluted, three or four times a day, for one or two days; tincture of strophanthus, ♏v–x, in water, t.i.d.; caffeine, gr. ss–v, not over gr. ix a day; theobromine, gr. xv–xxii a day; theocin, gr. iii, well diluted, twice or thrice daily for one day; diuretin, gr. xx–lx a day; potassium acetate or citrate, gr. x–xxx, t.i.d.; infusum scoparii (broom tops),—℥ss of broom tops in water Oiss, boiled down to a pint—2 oz. frequently until the whole pint is taken in twenty-four hours; triticum repens (couch grass), ℥i in water Oiss, boiled down to a pint, and taken in the same way; juniper berries, ℥i, steeped in boiling water, Oi, for one hour, then strained and given as the preceding; cream of tartar, ℥i, may be added to the latter. But these drugs should be used with discretion; they may do no good and may do harm. They should be used for no longer than one or two days at a time. W. Langdon Brown advises that the urine be tested daily for blood (see Urinalysis), and the drug discontinued at once if the slightest trace is found. He regards Basham's mixture as the best diuretic.

Kügelgen advocates decapsulation or nephrotomy in chronic nephritis with uncontrollable uræmic symptoms.

B. Chronic Interstitial or Chronic Vascular Nephritis (Granular Kidney).—This type of chronic nephritis is characterized by a slow, insidious onset, with anorexia, dyspepsia, anæmia, dizziness, headaches, shortness of breath on exertion, high blood-pressure (*q.v.*), usually general arteriosclerosis, hypertrophy of the heart with the second sound accentuated, and the following urinary changes, viz.—increase in amount and frequency, low specific gravity, a trace of albumin and a few casts; in the arteriosclerotic kidney the amount is normal or reduced, and the specific gravity is normal or increased (see Urinalysis). Nosebleed is common. Other hemorrhages, including renal epistaxis, cerebral hemorrhage, and retinal hemorrhage may occur. Other occasional manifestations are: cramps in the muscles, especially the calf muscles, neuralgias, attacks of spasmodic dyspnœa resembling asthma, transient paralyses and amaurosis, sudden œdema of the glottis or lungs, persistent vomiting or diarrhœa, cardiac incompetence, uræmia (*q.v.*). Acute pleurisy, pneumonia, and bronchitis are common complications.

The affection, however, is often latent.

Prognosis.—The disease is practically incurable, but the patient may live a long useful life. Says Osler: "The phenolsulphonephthalein test (see Urinalysis) gives valuable information as to the functional capacity of the kidneys and is a material aid in prognosis." "If the elimination of phthalein, on the administration of phenolsulphonephthalein, is below 10 per cent. in two hours, there is grave danger of uræmia" (see also Metabolism).

Etiology.—Acute nephritis (*q.v.*); chronic parenchymatous nephritis (*q.v.*); overeating and overdrinking; mental and nervous strain; chronic gastro-intestinal indigestion with protein putrefaction and resulting diamine intoxication; heredity; gout; diabetes, syphilis; alcohol; lead; chronic congestion due to heart disease; traumatism; chronic obstruction to the outflow of urine; arteriosclerosis (*q.v.*); chronic infection through the tonsils, teeth, sinuses, gall-bladder, etc.

Treatment.—Enjoin a quiet, orderly mode of life, with regular hours of eating and sleeping, rest before and after meals, woolen underclothing, a daily tepid bath with friction (no cold baths), daily gentle exercise in the open air, and a daily movement of the bowels, preferably by means of sodium sulphate, ℥i–viii, in hot water, one hour before breakfast. A weekly calomel purge followed by a saline, is advised (see

Part 11). A dry, warm, equable climate is best, such as that of Southern California, Northern Florida, Egypt, or Algiers. The diet should consist of milk, 1½ quarts or less a day; buttermilk, 1½ quarts or less a day, well-cooked cereals—oatmeal, wheat, farina, rice, barley, sago, tapioca, noodles, macaroni—vegetables—green peas, string beans, potatoes, carrots, turnips, cauliflower (restrict the use of lettuce, celery, radishes, sorrel, onions, garlic, tomatoes, asparagus, mushrooms)—puddings, cream, ice cream, bread, butter, an occasional egg, boiled three minutes, sweets and meat very sparingly. Reduce salt to a minimum. Allow no meat soups or extracts, internal organs, sauces, condiments, pastries, alcohol; tea, coffee, and tobacco in moderation, or not at all.

Some advocate restricted, some copious water drinking, some a "flushing out" once a week. Fluids should certainly be restricted when the blood tension is high.

When the blood-pressure is persistently high, with resulting headache, dizziness, and dyspnœa, enjoin rest and curtail the diet, keep the bowels active, encourage diaphoresis by means of hot baths, and prescribe nitroglycerin or sodium nitrite, or erythrol tetranitrate. Says Osler: nitroglycerin may be given "for six to seven weeks, then stopped for a week and resumed." Potassium iodide, gr. v, t.i.d., may also be given for long periods (see Arteriosclerosis).

℞ Sodii nitritis..... gr. ss
Erythrol tetranitratis..... gr. ¼
Mannitol nitritis..... gr. ¼
Ammonii hippuratis..... gr. i

(Called tabloids, Sodii Nitrit. Co., Oliver, Burroughs and Wellcome.)

Sig.—One tabloid twice or thrice a day, with a few days or a week's intermission in each month. (Oliver.)

For cardiac incompetency, manifested by a gallop or fetal rhythm, dyspnœa, dropsy, and scanty, albuminous urine, put the patient to bed on a reduced diet consisting of such concentrated, easily digestible foods as milk, cream, crackers, toast, zwieback, eggs boiled three minutes, and well-cooked cereals; open the bowels with calomel, gr. ii–v, at night, followed by Rochelle salt, ℥iv in hot water, one hour before breakfast, and administer digitalis: ℞ Tincturæ digitalis, ♏x, well diluted, three or four times a day; or ℞ Infusi recenti digitalis foliorum, ℥i-iv, diluted, three or four times a day; or ℞ Digitalini (Merck's German), gr. 1/10–½, t.i.d. hypodermically. Reduce the dose when the full effects of the drug are obtained, or should untoward symptoms occur, such as a slow, bigeminal pulse, nausea, restlessness, delirium, etc. (see Part 11). When prompt stimulation is demanded, inject camphor, gr. i–iii, in olive oil, gtt. x–xx several times a day. If the patient is robust, 300–700 c.c. of blood may be withdrawn. Apply ice to the precordium for the relief of palpitation. Give morphine for pain, restlessness, and insomnia (see also Insomnia).

For acid eructations, prescribe mistura rhei et sodæ, ℥ss–i–iv, once to thrice daily; or magnesia (Part 11), or sodium bicarbonate, a teaspoonful to a tumbler of water, to be sipped as required.

For distressing gaseous distension, restrict nitrogenous food, cleanse the bowels, and prescribe, perhaps, resorcin: ℞ Resorcinolis, gr. xx, Aquæ, ℥ii. M. Sig.—One drachm in water, t.i.d. (resorcin gr. 1¼ per dose).

For vomiting, withhold all food, give small pieces of ice to suck, apply an ice-bag, or mustard poultice, or heat to the epigastrium, and, if need be, administer small doses of morphine hypodermically, or some one of the remedies enumerated under Vomiting. Rectal feeding (*q.v.*) may be instituted.

For persistent diarrhœa, prescribe a calomel or castor oil purge, followed by tannigen, gr. v, in powder or capsule, three or four times daily; or Tinct. Kino, ℥ss, three or four times daily. A moderate diarrhœa should not be checked.

For anæmia, prescribe fresh air day and night, nourishing food, bitter tonics (tr. nucis vomicæ, and dilute hydrochloric acid, before meals), and iron (Blaud's mass, Basham's mixture, tinct. ferri perchloridi, ℥ss–i, t.i.d.) (Weir Mitchell.)

For the treatment of uræmia (manifested by a coated tongue, vomiting, dyspnœa, perhaps headache, irritable heart, high blood-pressure, diminished urinary secretion, muscular twitching, restlessness or drowsiness, delirium, etc.) see Uræmia.

Diuretics are permissible only when the urinary secretion is deficient (cardiac oliguria; see under Chronic Parenchymatous Nephritis.)

℞ Diuretin..... gr. x
Potasii tartratis..... gr. xx
Spiritus juniperi..... ♏xxx
Infusi scoparii, ad..... ℥i

M. Sig.—One ounce every four hours with plenty of water. (W. Langdon Brown.)

Decapsulation and fixation of the kidneys is to be considered only as a last resort of

doubtful utility in cases which are growing progressively worse under medical treatment.

Brill's Disease,—See Typhus Fever.

Brodie's Abscess.—See under Osteomyelitis.

Broken Cardiac Compensation.—See Cardiac Insufficiency.

Bronchial Catarrh.—See Bronchitis.

Dilatation.—See Bronchiectasis.

Obstruction.—See Bronchostenosis.

Stenosis.—See Bronchostenosis.

Stricture.—See Bronchostenosis.

Bronchiectasis.—Gr. *βρόγχος* bronchus + *ἔκτασις* dilatation.

Bronchial dilatation, either localized or diffuse, manifested clinically by a paroxysmal cough, occurring especially on rising in the morning and on lying down at night, and a copious muco-purulent, eventually offensive, fluid expectoration, which on standing separates into layers. Clubbing of the fingers frequently occurs.

The Prognosis is usually good in cases following measles, whooping cough, and influenza. In other cases the condition is apt to persist until death occurs from bronchopneumonia, tuberculous infection, hæmoptysis, gangrene, pyemia (particularly cerebral abscess), amyloid degeneration of the viscera, or acute dilatation of the heart. With care, however, in keeping the cavities aseptic, the patient may live many years.

Etiology.—Bronchitis, acute and chronic; pneumonia, lobar and lobular, especially bronchopneumonia following influenza, less often measles or whooping-cough; pleurisy with effusion; adhesive pleuritis; interlobar empyema; pulmonary collapse; fibrosis of the lung; emphysema; pneumonokoniosis; pulmonary neoplasm; tuberculosis; bronchial stricture or stenosis (see Bronchostenosis, for causes); chronic cough associated with poor health.

Treatment.—Fresh, clean air is of the first importance. The bronchial cavities should be emptied regularly, at least every morning and evening, by lowering the head and body, and inclining them toward the sound side, after which, once daily, creosote vapor should be inhaled within an enclosed space, *e.g.*, a small, air-tight room. About thirty drops of creosote are placed in water or sand, in a flat metal dish, on a tripod, over an alcohol lamp. The vapor is inhaled at first for fifteen minutes every other day; then the time is gradually increased up to one-half to one to two hours daily, and continued for three months. The eyes should be protected with watch-glasses sealed with adhesive plaster, the nose with cotton wool, the hair with a towel or cap, and the clothing with a gown. The inhalations produce, after about twenty minutes or so, violent coughing and expectoration, and are usually very efficacious.

The intratracheal injection twice daily of one dram of one of the following emulsions is also recommended:

℞ Menthol.....10.0
Guaiacol..... 2.0
Olei olivæ sterilisati.....88.0

℞ Emulsio iodoformi in oleo olivæ, 2–10 per cent. (less irritating than the above).

The emulsion may be injected through a nozzle whose tip is introduced beyond the vocal cords (the larynx may first have to be anæsthetized with a 4 per cent. solution of cocaine); or Musser's or Mendel's recommendation may be followed: "A simple method is to have the patient stick out the tongue and then gently inject on the lateral pharynx the drug, which then trickles down into the trachea and bronchi. The patient should be told not to swallow during the treatment, and the tongue should be kept out for some seconds after the drug has been injected."

The following drugs may serve as disinfectants and deodorizers of the bronchial secretions, viz., ℞ Olei terebinthinæ rectificati, ♏xv in water, t.i.d.; ℞ terebini, ♏v–xv, in capsule or on sugar, t.i.d.; ℞ Creosoti, ♏ii–v, well diluted in water, t.i.d.; ℞ Eucalyptol, ♏v–xv, in capsule, t.i.d., ℞ myrtol, ♏i–ii, in capsule, t.i.d.; ℞ Thymol, gr. i–ii, in capsule, t.i.d. ℞ Camphoræ, gr. i–iii, in capsule, three or four times a day. As little fluid as possible should be drunk, in order to reduce the bronchial secretions to a minimum.

If the opening into the dilated bronchus is large, the artificial production of pneumothorax by the injection of sterile nitrogen gas (Murphy) is said to be the most effectual treatment (see Pneumothorax, Artificial).

Of the two operative procedures at our disposal, (1) pneumotomy or rib resection, for the purpose of making the lung collapse, is without much danger, but is not apt to be altogether curative; (2) Pneumectomy, or excision of the lobe to which the cavity is confined, is apt to be curative if successful, but the mortality of the operation is about fifty per cent.

Bronchitis.—Gr. *βρόγχια* air-tubes + *-ιτις* inflammation.

A. Acute Bronchitis.—A common acute catarrhal inflammation of the bronchial mucous membrane, usually bilateral, char-

acterized by a substernal sense of rawness and compression, some fever, malaise, and a cough which is at first dry and racking and accompanied by musical râles and a scanty viscid expectoration, the latter in a few days becoming mucopurulent and abundant with bubbling râles, and later purulent. When the inflammation is confined to the trachea and larger bronchi, no râles are heard.

Tuberculous bronchitis is usually, and influenzal bronchitis often, unilateral instead of bilateral.

There is a benign bronchitis, usually lasting about a month, which occurs in India and has been introduced into various other countries, and which is accompanied by a uniformly rosy, viscid expectoration, resembling currant-juice. It is due to the spirochæta bronchialis. It may become chronic. There may be recurrence weeks, months, or even years after apparent recovery. Tartar emetic, arsenic, and iodine are recommended.

Prognosis.—Recovery from acute bronchitis usually occurs in from ten to fourteen days. In severe cases the duration is longer.

The danger is extension of the inflammation to the capillary bronchi with resulting bronchopneumonia (*q.v.*).

Etiology.—Exposure to inclement weather; an ordinary "cold," or catarrhal fever; irritating inhalations such as dust, fumes, or gases; foreign bodies; irritating pulmonary excretions such as iodine, bromine, etc.; infection of the upper air passages; asthma; hay fever; influenza; whooping cough; measles; scarlet fever; typhoid fever; diphtheria; malaria; smallpox; syphilis; tuberculosis; the plague; glanders; anthrax; pemphigus; trichiniasis; pneumonia; adenoids and enlarged tonsils; adynamic states, *e.g.*, heart disease, chronic nephritis, diabetes, alcoholism, carcinoma, scurvy, rickets, malnutrition, tuberculosis, syphilis, cholera, infective endocarditis.

Causative bacteria are the pneumococcus, streptococcus, influenza bacillus, micrococcus catarrhalis, Friedlander's diplobacillus, staphylococci, bacillus coli, typhoid bacillus, micrococcus tetragenus, saprophytes, spirochæta bronchialis of India.

Treatment.—Keep the patient in bed during the acute stage (three or four days or longer). The room should be warm—65°–72° F.—but well ventilated and free from draughts. A woolen undervest should be worn. The patient should be almost sitting, and should not lie too long on one side for fear of hypostatic congestion. The diet should be liquid during the acute stage. Open the bowels with castor oil, ℥ss–i, or calomel, gr. ii–v, followed by a saline (see Part 11).

A full hot bath of about fifteen minutes' duration, taken at the onset at home, and followed instantly by blanketing, hot water bottles, and copious hot drinks, such as hot lemonade containing whiskey or brandy, a tablespoonful to the tumbler, or hot milk and Seltzer or Apollinaris, or Vichy water, with or without a dessertspoonful of brandy or whiskey, every three or four hours, is often abortive. The hot pack, however, is perhaps in most cases preferable to the hot bath, because more practicable. A hot mustard foot bath, 1½ to 3 ounces of mustard to the bath, is also beneficial.

As diaphoretics, may be given—Dover's powder, gr. v–vii; or liquor ammonii acetatis, one tablespoonful, with spiritus ætheris nitrosi, one teaspoonful, well diluted; or pilocarpine, gr. $\frac{1}{20}$–$\frac{1}{10}$. Sodium bicarbonate, gr. x–xx, well diluted in hot water, every one or two hours for twenty-four hours, or potassium citrate, acetate, or carbonate, gr. x–xxx, well diluted, every four or five hours, is recommended. (See Part 11 for drug formulæ, etc.).

Quinine sulphate, gr. iii (7 to 10 grains a day for the first three or four days) is supposed to be of some abortive value, and may be useful in severe cases.

Tincture of aconite, gtt. i every hour for five or six doses, is of value if the pulse is full and rapid. It is especially useful in children.

The application of a mustard paste (1:2 of flour at first; later as the skin becomes sensitive, 1:5 or 6; kept on for five to fifteen minutes, or until a flush is produced) two to five times a day, followed by camphorated oil, or lard and turpentine, equal parts, is very valuable. Cold wet compresses, covered with dry flannel, and kept on until dry, or changed every two to four or five hours, are also well recommended.

The air of the room should be kept moist during the dry stage by means of the steam kettle. Every two or three hours the patient may inhale under a sheet, for about fifteen or thirty minutes, the vapor from a vessel of boiling normal saline solution; or sodium bicarbonate, 2–3 per cent. solution; or lime water; or plain water; or water containing compound tincture of benzoin, ℥i, and light magnesium carbonate, ℥i + to the pint; or creosote, ♏x–xv to the pint; or the following:

℞ Olei pini sylvestris,
Olei eucalypti..... aa ♏xv
Mentholis, seu acidi carbolici. gr. v
Magnesii carbonatis levis.... gr. x
Creosoti..... ♏x
Tincturæ benzoini compositæ. ℥i

M. Sig.—One teaspoonful in a pint of steaming water as an inhalant. Add glycerine ℥ii to the above, if used in a nebulizer. (McPhedran.)

The solution may be heated in a Holt croup kettle, or in a vessel on a tripod over an alcohol lamp. With infants the sheet may be placed over an umbrella. Every ten minutes the sheet should be lifted and fresh air wafted in. Holt and Kerley regard creosote as the best inhalant.

Yeo heartily recommends for children the following warm spray, which is "allowed to play freely before the child's mouth and nose, by means of a Seigle's steam-spray producer":

℞ Sodii bicarbonatis..... gr. x
Glycerini acidi carbolici..... ℥i
Aquæ destillatæ..... ℥i

M. Sig.—To be used warm as a spray. (Yeo.)

The following preparations are employed for the relief of a dry, harassing cough:

Dover's powder, gr. v–vii; gr. ⅒ every two hours for a one-year-old child (see also Part 11).

Dover's powder, gr. ss, and phenacetin, gr. ii every three to six hours for a five-year-old child (see also Part 11).

Paregoric, one month, ♏i; three months, ♏ii; one year, ♏v-x; five years, ♏xxx-xl (see also Part 11).

Codein, gr. 1/16–¼ (see Part 11).

Heroin, gr. ⅒–1/16 (see Part 11).

Morphine, gr. 1/32–1/12 (see Part 11).

Sedatives should be used only for a useless cough not associated with an accumulation of secretion in the tubes. They should not be given, as a rule, to children, or to the aged.

℞ Syrupi sanguinariæ,
Syrupi ipecacuanhæ,
Syrupi scillæ ..... aa℥ss (♏ ⅝–1¼ per dose)
Syrupi pruni virginianæ, q.s. ad. ℥iii

M. Sig.—One-half to one dram every two to three hours until relief is obtained. (For dry, harassing cough and chest oppression, J. H. Musser.) Syrup of ipecac may be given alone, several drops every hour.

℞ Vini antimonialis..
Vini ipecacuanhæ.. aa♏lxxx (♏x per dose)
Misturæ glycyrrhizæ compositæ... ℥i (℥i per dose.)
Liquoris ammonii acetatis, q.s. ad. ℥iv

M. Sig.—One-half ounce every four hours, for dry cough. (McPhedran.)

℞ Vini antimonialis.. ♏xxx (♏vii per dose)
Spiritus ætheris nitrosi..... ♏lxxx (♏xx per dose)
Liquoris ammonii acetatis..... ℥i (℥ii per dose)
Syrupi tolutani.... ℥iv (℥i per dose)
Aquæ camphoræ, ad ℥iv

M. Sig.—One ounce every four hours, for the dry stage. (H. Pritchard.)

	Infants	Adults
℞ Fluidextracti ipecacuanhæ.....	♏v–xx (♏⅓–1⅓ per dose)	
Ammonii chloridi..	gr. iii–xv (gr. ⅓–1 per dose)	
Syrupi tolutani....	℥ss (♏xvi per dose)	
Aquæ.....	℥iss	

M. Sig.—One teaspoonful every two hours, according to age, for the dry stage. (Forchheimer.)

℞ Infusi ipecacuanhæ, gr. ss–x ad ℥iss (gr. ⅒–⅔ per dose).
Ammonii chloridi, gr. iii–xv (gr. ⅓–1 per dose).
Syrupi..... ℥ss

M. Sig.—One teaspoonful every two hours, according to age—for the dry stage (the infusion of ipecac is better than the fluid extract). —(Forchheimer).

℞ Ammonii chloridi.. gr. xl (gr. v per dose)
Misturæ glycyrrhizæ compositæ... ℥iv

M. Sig.—Tablespoonful every three or four hours, as required, for cough.

℞ Potassii seu ammonii iodidi, solutionis concentrati..... ℥ii

Sig.—Three to five drops, well diluted, every two or three hours, for the dry stage.

℞ Codeinæ sulphatis. gr. iv (gr. ⅓ per dose)
Ammonii chloridi.. ℥iss (gr. 3¾ per dose)
Syrupi acidi citrici vel Syrupi tolutani..... ℥i
Aquæ, q.s. ad..... ℥iv

M. Sig.—Teaspoonful in water, every two or three hours. (*Handbook of Therapy of the A. M. A.*)

"Carbonate of ammonium," says Pritchard, "should not be used in the acute stage of acute bronchitis." Ipecac is especially indicated. Ammonium chloride is an efficient expectorant in the second stage.

Should suffocation threaten, administer a prompt emetic,—ipecac gr. xx; or better, apomorphine, gr. 1/10 hypodermically, gr. ⅕ by mouth; for children, wine of ipecac, one tablespoonful, repeated if necessary. For attacks of suffocation in infants, employ spanking, alternate hot and cold douches to the chest, the hot mustard bath—one tablespoonful to six gallons,—a mustard pack, of the same strength, to the entire body, oxygen inhalations (*q.v.*), and dry cupping (*q.v.*) to the front and back of the chest for five to ten minutes every few hours. The air of the room should be kept warm 70°–72° F. (Holt.)

Strychnine, gr. 1/40–1/30, administered hypodermically, is a respiratory and circulatory stimulant. Given at bedtime it may prevent nocturnal dyspnœa. For a weak heart administer digitalis, or caffeine or alcohol every three hours (see Part 11.)

For severe dyspnœa and cyanosis apply dry cups to the back and mustard poultices to the front.

Discontinue the use of antimony, opium, and aconite, just as soon as the cough, dryness, and fever are relieved.

During the Wet Stage the following expectorants, etc., may be used if deemed proper:

℞ Terpini hydratis vel Olei picis liquidæ, et Ammonii chloridi; aa gr. v, in capsule, every three hours.

℞ Terebeni, 5 to 10 drops, on sugar, or in capsule, t.i.d.

℞ Ammonii chloridi... ʒss–i (gr. iiss–v per dose)
Fluidextracti senegæ ʒii–iv (♏x–xx per dose)
Aquæ, q.s. ad..... ʒvi
M. Sig.—Tablespoonful every two hours.

℞ Olei terebinthæ rectificati, gtt. x–xx, in a tablespoonful of milk, followed immediately by half a glass of milk, t.i.d. Discontinue at once should signs of renal irritation appear.

℞ Sodii benzoatis..... gr. xl–ʒiv
Aquæ..... ʒiv
M. Sig.—Tablespoonful (gr. v–xxx) in water, twice or thrice daily.

℞ Balsami tolutani vel
Peruvianæ..... ʒi–iii (gr. v–xv per dose)
Mucilaginis acaciæ.. ʒii
M. Sig.—One teaspoonful several times a day. (The balsams contain benzoin or its derivatives.)

℞ Olei cupebæ, copaibæ, vel santali, ♏x–xv in capsule, several times a day. Discontinue should gastric irritation occur.

℞ Infusi senegæ..... ʒiv
Ammonii carbonatis..... gr. xxxii
Tincturæ scillæ..... ♏clx
Spiritus chloroformi..... ʒii
Aquam, ad..... ʒviii B. P.
M. Sig.—Two tablespoonfuls every four or five hours. (Yeo.)

℞ Tincturæ belladonnæ, ♏v–x, in water, every three or four hours, or Atropinæ, gr. 1/200–1/50, as required, for bronchorrhœa.

℞ Fluidextracti hydrastis Canadensis, gtt. xx–xxv, well diluted in milk or water, t.i.d. (N. Sænger.)

℞ Hexamethylenaminæ, gr. viiss, in capsule or powder, t.i.d. (Mikhailoff.)

Medicated steam inhalations are also useful in the Wet Stage.

During convalescence tonics may be indicated, *e.g.*, elixir ferri, quininæ, et strychninæ phosphati, one teaspoonful well diluted, t.i.d.; or arsenic or codliver oil. A warm dry climate is best, such as that of Southern Arizona, New Mexico, Western Kansas, Colorado, Wyoming, Georgia, Upper Egypt, Algiers.

B. Chronic Bronchitis.—A common chronic inflammation of the bronchial mucous membrane, always associated in old men with emphysema and cardiac weakness, and often, at any age, with bronchial dilatations; characterized by a chronic, variable cough, especially marked in winter, shortness of breath on exertion, usually abundant expectoration, and the following physical signs—chest usually deep, percussion note clear or hyperresonant, sibilant, rhonchi on expiration, which is prolonged, or, in children, coarse mucous râles, often, in the elderly, crepitant râles at the bases. If the trachea and larger bronchi are alone affected, no physical signs may be evident. Occasionally there is little or no expectoration (dry catarrh); very rarely the expectoration is fetid (putrid bronchitis: exclude bronchiectasis, gangrene, abscess, tuberculous cavities, perforation of the lung by an empyema, and foreign body).

The *Prognosis* in the young is favorable; in those beyond middle life it is unfavorable as regards cure.

Etiology.—Acute bronchitis; a cold, changeable climate; gout; obesity; alcoholism; arteriosclerosis; chronic nephritis; chronic dyspepsia giving rise to auto-intoxication; severe anæmia; rickets; malnutrition; tuberculosis; syphilis; mouth-breathing due to nasal obstruction, adenoids, etc. (see Nose Diseases, Part 8); chronic naso-pharyngeal catarrh (see Nose Diseases); irritating inhalations, *e.g.*, dust, fumes, gases, tobacco smoke; certain drugs excreted by the bronchial mucosa, such as iodine and bromine; chest deformities due to rickets or Pott's disease; protracted whooping-cough; measles; asthma; emphysema; pleural adhesions; enlarged bronchial glands; chronic interstitial pneumonia; bronchiectasis; pulmonary neoplasm; pneumonokoniosis; aortic aneurysm; chronic passive congestion of the lungs due to heart disease.

Treatment.—Attend to any possible causal factor. Enjoin an outdoor life, with light but warm clothing and woolen undergarments, deep-breathing exercises every morning before breakfast, and regular bowel activity. A course of calomel, gr. ii–v a day for three days, is often valuable. Sulphur, gr. v–x, t.i.d., may be of service. Prolonged warm full baths, ameliorate cough. Such tonics as codliver oil, to which creosote, or terebene may be added, elixir calcii et sodii glycero-phosphati, two teaspoonfuls t.i.d., and the elixir ferri, quininæ, et strych-

ninæ phosphati, one teaspoonful in water t.i.d., are often useful (see Drugs, Part 11).

The alkalies are well recommended, and are especially indicated, if the urine is highly acid (gouty diathesis). Five or six ounces of Apollinaris, or Ems water may be taken in a little boiling hot milk four or five times a day (Yeo); or about a half-teaspoonful of sodium bicarbonate may be added to the milk. The iodides are very useful.

For troublesome cough try the following:

℞ Sodii bicarbonatis. ʒiss (gr. xv per dose)
Sodii chloridi..... ʒss (gr. v per dose)
Ammonii carbonatis ʒss (gr. v per dose)
Potassii iodidi..... gr. xx (gr. iii+1/3 per dose)
Spiritus chloroformi ʒss–ii (♏v–xx per dose)
Aquæ anisi, q.s. ad. ʒvi

M. Sig.—Two tablespoonfuls, with two of hot water, or hot milk, every four to six hours, as required for cough (usually in the morning).

Bromide, ʒiss (gr. xv per dose) may be added to the above if the cough is chiefly an irritative one. Whiskey is useful at bedtime for the aged. Codeine heroin, and paregoric should be used, if at all, with caution.

An oronasal respirator containing a dry, volatile antiseptic, such as ammonium chloride, or menthol, or a sponge saturated with terebene, spirits of turpentine, or eucalyptol, may be worn for several hours at a time.

Medicated steam inhalations are very valuable: creosote, ♏x–xv, to the pint of steaming water, over an alcohol lamp; or ol. terebinthæ, gtt. xx–xxx, to the pint, or terebene, oil of eucalyptus, menthol, ol. picis liquidæ, or compound tincture of benzoin, ʒi of any of the former to the pint; or comp. tr. benzoin and paregoric, aa one tablespoonful to the pint. The inhalations are taken under a sheet, for fifteen to thirty minutes, several times a day.

A mustard paste (*q.v.* in Part 11) applied to the whole chest at bedtime is of great service. Another useful counter-irritant is turpentine liniment containing tincture of iodine, ʒss–i to the ounce.

Forchheimer warmly recommends elevation of the foot of the bed at night, for purposes of drainage, in cases in which there is much secretion. Manual compression of the thorax during expiration, with the patient prone, the hands being applied over the axillary regions, is useful as an aid in expelling the secretions in emphysema.

The following drugs are sometimes of service:

a. In cases of scanty and viscid secretion,
℞ Potassii iodidi... gr. lxxx
Ammonii carbonatis..... gr. lxxx (aa gr. v per dose)
Aquam, ad ..... ʒiv
M. Sig.—Two teaspoonfuls in hot water or milk, every four hours.

℞ Ammonii chloridi vel carbonatis, gr. v every four hours.

℞ Syrupi picis liquidæ, ʒss–i–ii, every three or four hours.

℞ Syrupi vel vini ipecacuanhæ, ♏x–xv–xx, in water, every three or four hours.

℞ Apomorphinæ, gr. 1/30–1/15, every two hours; or better, the following:

℞ Euporphinæ, gr. 1/30, every two hours, up to gr. 1/6–2/3 a day. (Ortner.)

℞ Pilocarpinæ, 2½ per cent. solut., gtt. v (gr. 1/8), two or three times daily by mouth, increased by one drop at a time until a moderate increase of perspiration and saliva follows each dose.

b. In cases of profuse secretion,
℞ Creosoti (Beechwood)... ʒi (gr. iii per dose)
Tincturæ gentianæ compositæ..... ʒii
Alcoholis..... ʒii ʒss
Vini xerici, q.s., ad..... Oss
M. Sig.—Tablespoonful in a glass of water, t.i.d. (Bouchardat and Gimbert.)

℞ Creosotalis, drops v–xx, gradually increased to one teaspoonful three to four times a day, in milk. (Ortner.)

℞ Guaiacolis, ♏v, in capsule, or in well-diluted whiskey, two or three times daily.

℞ Olei terebinthinæ rectificati, ♏x in a tablespoonful of milk, followed immediately by half a glass of milk. Caution, turpentine is a renal irritant.

℞ Terpeni hydratis, gr. i–ii–v, in capsule, every three or four hours (see Part 11).

℞ Terebini, ♏v–viii–xx, on sugar or in capsule, t.i.d. (see Part 11).

℞ Ammonii chloridi..... ʒi (about gr. iv per dose)
Fluidextracti senegæ..... ʒiiss (about ♏x per dose)
Aquæ, q.s. ad.. ʒii
M. Sig.—One teaspoonful every two hours.

℞ Sodii benzoatis gr. xl–ʒiv (gr. v–xxx per dose)
Aquæ..... ʒiv
M. Sig.—Tablespoonful in water twice or thrice daily. (See Part 11.)

℞ Balsami tolutani vel Peruvianæ, gr. lxxx–ʒiv (about gr. v–xv per dose)
Mucilaginis acaciæ, ad.....ʒii
M. Sig.—Teaspoonful several times a day. (These balsams contain benzoin or its derivatives.)

℞ Oleoresinæ cubebæ, vel copaibæ, vel santali, ♏v–x–xv, in capsulæ, several times a day. Discontinue if gastric irritation ensues.

℞ Olei picis liquidæ,
Olei copaibæ..... aa ♏iv
Fiat capsula. Sig.—One capsule four to eight times a day.

℞ Tincturæ belladonnæ, gtt. x in a wineglassful of water, every three or four hours as required, to produce a physiological effect. (See Part 11.)

For excessive dyspnœa, especially at night, administer strychnine hypodermically, gr. $\frac{1}{40}$–$\frac{1}{30}$. It is both a respiratory and a circulatory stimulant. Digitalis (*q.v.* in Part 11) and strychnine in combination are valuable when the heart is feeble. Moderate exercise in the open air is a good heart tonic.

In the bronchitis of heart and kidney disease, enjoin rest, a comparatively dry and salt-free diet, and free bowel activity. Employ digitalis when required. Potassium iodide (*q.v.*) is often valuable for the purpose of easing and loosening the cough, and also "for its action on the myocardium." Morphine hypodermically is recommended for a "weak, irregular heart with sleeplessness." Give diuretin (*q.v.*) for œdema. Dry cupping (see Cupping) of the chest two or three times a day may be of service. For asthmatic attacks morphine may be given if there is not much secretion, otherwise the following:

℞ Potassii iodidi . . . ʒi–ii (gr. viii–xv per dose)
Ammonii, carbonatis . . . . . gr. xxiv–xl (gr. iii–v per dose)
Aquam, ad . . . . . ʒi

M. Sig.—One teaspoonful, t.i.d., well diluted.

The subjects of chronic bronchitis do best in a warm, equable climate. For the dry variety select a moist climate, such as that of Southern California, Florida, Southern France, the Riviera, Corsica; for the moist variety, a dry climate such as that of Southern Arizona, New Mexico, Western Kansas, Colorado, Wyoming, Georgia, Upper Egypt.

Kerley regards recurrent bronchitis as probably a manifestation of a gouty or rheumatic tendency, and he prescribes an outdoor life in a dry climate, a daily warm tub bath followed by a cool douche and a brisk rubdown, a daily bowel movement, the restriction of meat and sugar, and the administration of sodium bicarbonate in large doses, together with the salicylates:

℞ Sodii salicylatis . . . . . gr. xxxvi (gr. iii per dose
Sodii bicarbonatis . . . gr. lxxii (gr. vi per dose)
Elixiris simplicis . . . . ʒv
Aquæ, q.s. ad . . . . . ʒii

M. Sig.—One teaspoonful, well diluted, twice daily after meals (for a child of four years). (Kerley.)

The salicylates may be given for five days at a time, at intervals of five days, for many months.

Shilling praises the X-ray (*q.v.*).

C. Fœtid or Putrid Bronchitis (L *fétor*, stench; *put'ridus*, rotten).

Besides those drugs recommended for the wet variety of chronic bronchitis, the following are useful:

℞ Myrtol, ♏ii, in capsule. Two capsules every two hours.

℞ Olei santali, gtt. v, in capsule. One capsule three to five times a day.

℞ Fluidextracti eucalypti, gtt. xv–xx, in water t.i.d.

A spray of a 2–4 per cent. solution of carbolic acid may be inhaled; or the following medicated steam inhalations may be employed, viz., thymol, ol. eucalypti, or ol. picis liquidæ, ʒi to the pint of steaming water; or ol. terebinthinæ, gtt. xx–xxx to the pint; or creosote or carbolic acid, gtt. xv to the pint.

Equal parts of alcohol and carbolic acid, or of alcohol, spirits of chloroform, and creosote, may be inhaled from a mask or respirator, worn during the day.

℞ Olei cinnamomi . . . . . ♏v
Mentholis . . . . . gr. x
Olei pini sylvestris . . . . . ʒss
Spiritus chloroformi . . . . . ʒss
Creosoti . . . . . ʒii

M. Sig.—Ten drops on the sponge or cotton of a respirator or inhaler, renewed every hour. (Dundas Grant.)

To mitigate the offensive odor, one may hang about the room muslin strips dipped in Platt's chlorides, or in a mixture of one part of oil of eucalyptus and six parts of rectified spirit; or the latter may be sprayed into the air.

In inveterate cases one may try the intratracheal injections used in bronchiectasis (*q.v.*).

The diet should be nutritious. Codliver oil and creosote (see Part 11) are valuable.

℞ Ammonii carbonatis . . . gr. xl (gr. v per dose)
Tincturæ nucis vomicæ . ʒiiss (♏xviii per dose)
Tincturæ cinchonæ compositæ . . . . . ʒiv (ʒss per dose)
Spiritus chloroformi . . . . ʒii (♏xv per dose)
Infusi senegæ, q.s. ad . . ʒviii (ʒ⅞ per dose)

M. Sig.—Two tablespoonfuls t.i.d. Tonic and expectorant in fœtid bronchitis. (Yeo.)

Bronchitis, Capillary.—See Bronchopneumonia.

Fœtid.—See C. under Bronchitis.

Bronchitis, Fibrinous, Plastic, Croupous or Pseudo-membranous.—A very rare, acute, or chronic recurrent, affection of the bronchial tubes, characterized by the formation of fibrinous casts, "which are expelled in paroxysms of dyspnœa and cough." (Osler.)

The acute cases occur often in connection with infectious diseases and are usually fatal.

Treatment.—The general treatment is that of acute bronchitis (*q.v.*). To loosen the exudate, employ, under a sheet, inhalations of steaming lime water, or creosote, ♏xv to the pint; or apply these preparations with a nebulizer.

Potassium iodide in full doses and pilocarpine are employed for the same purpose. Intratracheal injections, of olive oil, plain, or medicated with creosote, 1:20, may be given (see Bronchiectasis). An emetic may sometimes be required, viz., apomorphine, or euporphine, hypodermically.

Atropine may be tried (see Part 11 for drug formulæ, etc.).

Bronchitis, Fœtid.—See C. under Bronchitis.

Putrid.—See C. under Bronchitis.

Bronchopneumonia.—Gr. *βρόγχια* air-tubes + *πνεύμων* lung.

An acute inflammation of the bronchioles and their related lobules (lobular pneumonia), with the signs of bronchitis of the smaller tubes (subcrepitant, musical, and diverse râles throughout the chest), but with more severe symptoms, *e.g.*, high fever, rapid pulse, dyspnœa, and perhaps cyanosis. Some dulness and blowing breathing may sometimes be detected.

Abscess and gangrene sometimes occur, especially in aspiration pneumonia. Otitis is frequent.

The Prognosis is serious, but desperate cases often recover. The duration varies from seven days or less to twenty-one days or longer (Holt). Resolution is sometimes long delayed. Relapse may occur.

Etiology.—Acute infectious diseases, especially bronchitis, measles, whooping cough, diphtheria, scarlet fever, and influenza, less often typhoid fever, erysipelas, smallpox, general sepsis, etc.; the aspiration of foreign material; debilitating diseases, *e.g.*, rickets, diarrhœa, cancer, nephritis, diabetes, heart disease, tuberculosis, etc.; cold, damp, and changeable weather; bad hygiene; infancy; old age.

Causal bacteria are the pneumococcus, streptococcus, influenza bacillus, staphylococci aureus and albus, Friedländer's bacillus pneumoniæ, sometimes the tubercle bacillus, rarely the bacilli typhosus and diphtheriæ. The infection is almost always mixed.

Treatment.—Put the patient to bed in a comfortably warm (not over 70°–72° F.) but well-ventilated room, with the windows wide open, and the patient screened against draughts. The bed clothing should not be heavy. Open the bowels with calomel, or castor oil (see Part 11 for drugs). Feed the patient every three hours with concentrated liquid nourishment, *e.g.*, milk, diluted if necessary, buttermilk, eggs boiled three minutes or raw, beef juice, broths, cocoa, well-cooked cereal gruels, ice-cream. Water should be given freely, best in the form of lemonade. In bottle-fed infants dilute the milk one-third or one-half; in the breast-fed, give water before and between nursings.

Yeo recommends for children the following warm spray, which is "allowed to play freely before the child's mouth and nose, by means of a Seigle's steam spray producer":

℞ Sodii bicarbonatis..... gr. x
Glycerini acidi carbolici..... ℥i
Aquæ destillatæ..... ℥i
M. Sig.—Use as a warm spray. (Yeo.)

A kettle of water may be kept upon the stove, containing tincture of benzoin, ℥ss, or a few grains of menthol.

A mustard paste applied to the whole chest front and back, three to six times daily, or as required, is very valuable, especially for dyspnœa, circulatory failure, and cough. Employ at first a strength of one part mustard to two of flour, later reducing this strength as the skin becomes sensitive. Keep the paste on for five to fifteen minutes, or until flushing is produced, then anoint the chest with camphorated oil, or equal parts of lard and turpentine, and cover with a light piece of flannel. Many advise the application of a cold linen compress, wrung out of water at a temperature of 60°–70° F., covered with flannel, and changed every half to one to two hours. Frequent dry cups (*q.v.*) are recommended by some.

The patient should be raised slightly with pillows and the position changed frequently in order to prevent hypostasis.

Creosote carbonate is well recommended by some: ℞ Creosotalis gtt. v–xx, gradually increased to one teaspoonful, three to four times a day, in milk (Ortner). Forchheimer always gave quinine which he believed to be of special value in influenza. Expectorants, when required, for the facilitation of expectoration and coughing, should be used with care, so as to avoid disturbing the digestion.

℞ Ammonii chloridi vel carbonatis..... gr. xxxii–lxxx (gr. ii–v per dose)
Vini ipecacuanhæ..... ℥iiss–v (♏x–xx per dose)
Glycerini..... ℥i (℥ss per dose)
Aquam, ad ..... ℥ii
M. Sig.—One dram in water every four to six to eight hours.

If the cough is very distressing, add paregoric, or codeine, or Dover's powder, or heroin, or morphine. (See Part 11 for drugs).

Medicated steam inhalations are advocated by some, but are condemned by Abt. They "should be stopped if the patient becomes cyanosed or the expectoration copious," says Jex-Blake. Use ten drops of creosote in a pint of steaming water over an alcohol lamp under a sheet; continue the inhalation for thirty minutes at a time, but raise the sheet for fresh air every ten minutes. Repeat the inhalation every two or three hours.

For hyperpyrexia (a temperature of 105° F. or over) employ hydrotherapy: (1) cool sponging of the whole body; an ice-cap to the top of the head; (2) cold packs covered with a woolen blanket, an ice-cap to the head, the packs to be repeated at short intervals until the temperature is lowered several degrees; (3) the full bath at a temperature of 90°–96°, gradually lowered to 75°–60°, with friction of the skin, for five to ten minutes, two or three times a day, an ice-cap being placed to the top of the head. Says Osler: "Hydrotherapy is especially indicated for patients with high fever, delirium, or stupor, severe toxæmia, or circulatory failure." Holt says: "When with hyperpyrexia (105° F. or over) we have general cyanosis, cold surface, feeble pulse, shallow respiration, and stupor, cold is contraindicated and a hot mustard bath should be used"—1 to 2 tablespoonfuls of mustard to 4 gallons of water at a temperature of 106°–108° F.; keep the patient in the bath for one or two minutes, at the same time splashing cold water on the face, then take out, dry rapidly, and put back to bed (Jex-Blake). Phenacetin may be given only for the purpose of allaying restlessness when cold or tepid sponging has failed.

Early cardiac stimulation, before dilatation occurs, is advised. Alcohol (whiskey or brandy) is considered an excellent heart stimulant in pneumonia by some; condemned by others. Other excellent stimulants are caffeine, digitalis, strychnine, strophanthus, atropine, belladonna. For a quick effect employ, hypodermically, adrenalin, or camphor. Hoffman's anodyne, aromatic spirits of ammonia, and ammonium carbonate (both stimulant and expectorant) are also well recommended for dyspnœa and cyanosis. (See Part 11).

If the bronchi fill rapidly with mucus, an emetic may be given if the patient is robust: wine of ipecac, or copper sulphate, or apomorphine followed by atropine or strychnine. (See Part 11).

For collapse employ the hot mustard bath, dry cups, adrenalin, caffeine, or camphor hypodermically, and oxygen continuously, or for one or two minutes out of every seven or ten (Kerley). Oxygen is administered through a funnel, draped with a curtain, held over the mouth and nose. According to L. E. Hill, pure oxygen may be breathed for two to four hours continuously, without harm; and an atmosphere of 50 per cent. oxygen can be breathed indefinitely. He says: "The cylinder valve must be opened wide enough to give a pleasant cool current (as tested upon the lips), and drive the exhaled CO_2 out of the mask." Hill's mask (made by Messrs. Davis Bros., St. Thomas's Street, S.E., London) should be of service.

In the aged, stimulation, especially with alcohol and strychnine, and concentrated nutriment, are the main requisites.

During convalescence, fresh air and tonics are indicated: codliver oil, syrup of the iodide of iron, arsenic, nux vomica (see Part 11, for drugs). For serum treatment, see Pneumonia, Lobar.

Bronchostenosis; Bronchial Obstruction.—Gr. *βρόγχος* bronchus + *στένωσις* stricture.

Bronchial obstruction is manifested by cough, which is usually dry, dyspnœa associated with noisy stridulous breathing and inspiratory retraction of the chest, retrosternal distress, a hoarse broken voice, and feeble vesicular murmur over the part supplied by the obstructed tube. Laryngeal and tracheal obstruction (*q.v.*) are to be excluded.

Etiology.—Foreign bodies (*q.v.*); aneurysm; mediastinal tumors, *e.g.*, tuberculous, syphilitic, or malignant bronchial glands, leukemia, Hodgkin's disease; mediastinal abscess, secondary to disease of the bronchial glands, sternum, vertebræ, clavicles, or œsophagus; pericardial effusion; dilatation of the left auricle; cardiac hypertrophy; perforation of a bronchus by neoplasms or diseased glands; bronchial disease, *e.g.*, fibrinous bronchitis, syphilitic peri-bronchitis, gummata, neoplasms, perichondritis, ulceration due to burns, foreign bodies, or syphilis, spasm as in asthma.

Treatment.—For the removal of foreign bodies, see Foreign Bodies in the Air Passages.

The administration of morphine, atropine, and chloroform, and venesection may afford relief in cases of aneurysm (see Part 11 for drugs).

Potassium iodide may be tried in all cases, of whatever cause, except, of course, obstruction due to foreign bodies.

In cicatricial stenosis the tube may be

dilated through a tracheotomy wound by means of graduated sounds.

Bronzed Diabetes.—See Hæmochromatosis.

Brown-Sequard's Paralysis.—See Hæmatomyelia.

Bruise.—See Contusion.

Bubonic Plague.—Gr. *βουβών* groin. See Plague.

Bulbar Paralysis, Acute.—An acute form of glosso-labio-laryngeal paralysis, characterized by the following symptoms: difficult speech, dribbling of saliva, difficulty in chewing and swallowing, inability to whistle, and, in palatal paralysis, regurgitation of fluids through the nose and immobility of the palate when the patient says, "Ab."

Etiology.—Hemorrhage, embolism, thrombosis, or inflammation (acute poliomyelitis, diphtheria, electric shock) in the pons or medulla. Myasthenia gravis (*q.v.*) is a transient bulbar paralysis. The symptoms of bulbar palsy may also result from gummata or tumors involving the vagus, accessory and hypoglossal nerves at the base of the skull.

Treatment.—Treat the cause. See Progressive (Central) Muscular Atrophy, under Atrophies, the Progressive Muscular.

Bulbar Paralysis, Chronic.—See Atrophies, the Progressive Muscular.

Bulimia; Polyphagia.—Gr. *βοῦς* ox + *λιμός* hunger; *πολύς* much + *φάγειν* to eat.

Bulimia means excessive hunger. Acoria or akoria (Gr. *α* priv. + *κόρος* satiety) means absence of the sensation of satiety. The two are not necessarily associated.

Etiology.—Neurasthenia; hysteria; various psychoses, including shock, sorrow, and mental excitement; disorders of the male sexual organs; exophthalmic goitre; epilepsy; cerebral tumor; syphilis; diabetes; pregnancy; pulmonary tuberculosis; intestinal worms; gastric ulcer; gastric carcinoma; gastric dilatation (especially those gastric disorders associated with hypersecretion and hyperacidity).

Atony and dilatation of the stomach may result from the large amounts of food ingested.

Treatment.—Attend to the underlying condition. Strontium bromide, gr. xv, well diluted, three or four times a day, codeine, opium and arsenic are recommended. (See Part 11). It is advised that the patient eat slowly, every two hours, masticating the food thoroughly.

For acoria is recommended strychnine in ascending doses.

Burns.—See Skin Diseases, Part 5.

Cachexial Fever.—Gr. *κακος* ill + *ἕξις* habit. See Kala-Azar.

Cacosmia.—See Nose Diseases, Part 8.

Caisson Disease; Diver's Paralysis.—An affection appearing in divers or workers in caissons or deep mines shortly after their return to the surface, characterized by severe pains, headache, giddiness, etc., ("bends"), followed in severe cases by paraplegia, rarely monoplegia or hemiplegia, resembling that of myelitis, and due to too rapid decompression, whereby the nitrogen, with which the tissues have become saturated during the increased air pressure, suddenly escapes as bubbles into the blood and tissue spaces, giving rise to air embolism and laceration of the tissues, especially of the spinal cord.

In mild cases, as stated, there occur only severe pains (the "bends"); in severe cases unconsciousness and cyanosis, as well as paralysis.

The condition is serious, both as to life and persistence of paralysis, but many cases recover, often rapidly.

Treatment.—Immediate recompression should be resorted to as soon as untoward symptoms, such as headache, giddiness, pains, etc., appear. The severe pains may require morphine, hot fomentations, and massage.

The preventive treatment is gradual decompression. The workers should remain under compression no longer than two hours in each shift; for the first exposure only one hour. They should be men of good health and habits, not obese, and not hungry.

Calculus, Biliary.—L. *Calc'ulus*, pebble; *bĭlis*, bile. See Cholelithiasis.

Pancreatic.—See Pancreatic Calculus.

Renal and Ureteral.—See Nephrolithiasis.

Salivary.—See Salivary Calculus.

Ureteral.—See Cholelithiasis.

Urinary.—See Nephrolithiasis.

Vesical.—See Genito-Urinary Diseases; and Gynæcology.

Caloric Food Values.—See Food Values.

Cancer.—See Malignant Neoplasms.

Cancer of the Breast.—L. *Canc'er*, crab. See Breast Enlargements.

Cancer of the Gall-Bladder and Biliary Ducts.—Cancer of these structures is seen usually in elderly women. Cholelithiasis is evidently a causal factor.

The onset is with vague gastric symptoms, local tenderness, and pain, which is sometimes colicky. Soon there follow enlargement of the gall-bladder, jaundice, and

cachexia. The disease is usually fatal within six months.

The Treatment is surgical.

Cancer of the Intestines.—Cachexia occurs, and a tumor may usually be palpated. If the growth occurs in the duodenum, above the papilla, the resulting symptoms resemble those of cancer of the pylorus (*q.v.*); if it occurs about the papilla, the symptoms are those of pyloric obstruction and obstructive jaundice; if below the papilla, there are gastric obstruction and vomiting of bile and pancreatic juice, the latter being demonstrable by its lipolytic and proteolytic action in an alkaline medium. If the growth occurs in the jejunum or ilium, the following symptoms arise: some obstruction and constipation which may alternate with diarrhœa, pain, which is frequently colicky, and occult bleeding revealed by microscopic examination of the fæces and the Benzidin test (see under Gastric Ulcer).

If the growth occurs in the colon, the following symptoms present themselves: colicky pains, constipation, which may alternate with diarrhœa; tumor, distention, the occurrence of visible peristaltic waves above the tumor, possibly narrow, circular, ribbon-shaped, or rectangular fæces, due to stenosis.

For cancer of the rectum, see Rectal and Anal Tumors.

Treatment.—Early operation is, of course, the only curative treatment. If the case is inoperable, feed the patient as in cancer of the stomach, with easily digestible food containing little residue. Give frequent small doses of laxatives and oil enemata. For meteorism give intestinal antiseptics (see Tympanites). Finally, when an analgesic is required, employ Schlesinger's solution (*q.v.* in Part 11).

Cancer of the Liver.—Cancer of the liver is usually secondary to cancer of the stomach or intestines. It is characterized by progressive enlargment of the liver, which is of particular diagnostic significance if nodular; cachexia, dyspepsia, commonly jaundice, sometimes ascites.

It is usually fatal in from three to fifteen months.

The Treatment is only palliative The diagnosis of tumor of the liver, however, calls for an exploratory operation, as some tumors may be successfully removed. For other causes of enlargement of the liver, see Liver Enlargement. Tentative antiluetic treatment should be employed.

Cancer of the Lung.—See under Pulmonary Tumors.

Cancer of the Œsophagus.—Cancer of the œsophagus is manifested by the appearance, usually in one past forty, of difficulty in swallowing, obstruction to the passage of a tube, local discomfort or pain, and rapid loss of flesh and strength. Dysphagia is not always present. Vomiting immediately following deglutition occurs when the œsophagus has become dilated.

Exclude other causes of Œsophageal Stenosis (*q.v.*). Always make an œsophagoscopic examination.

The disease is fatal usually in from six months to two years.

Treatment.—This is only palliative. Feed the patient by mouth as long as possible, with a diet of milk, buttermilk, koumyss, cream, ice-cream, soups thickened with flour, cream, eggs, and butter, well-cooked cereals, fine purée of potato, carrots and spinach, minced tripe, eggs, custards, fruit juices diluted with mineral water, wine. Olive oil may be swallowed before taking food. A ten per cent. solution of sodium bicarbonate (48 grains to the ounce) is recommended as a mouth-wash and to swallow for the purpose of dissolving the accumulation of stringy mucus. Papayotin, gr. i–v, may be added to the soda solution.

The œsophagus may be irrigated daily or less often by means of Boas's recurrent silk catheter or the stomach tube, followed by the introduction of 30 c.c. of warm olive oil. One hour later the patient may take food.

For the relief of pain and spasm are recommended the following:

Silver nitrate, gr. iii, in water, ℥viiss. One tablespoonful, t.i.d.a.c.

Eucain, 3–4 per cent. solution, 10–15 drops, t.i.d.

Tincture of belladonna, 10–15 drops in water, t.i.d.

Hoffman's anodyne, ℥i–ii, well diluted.

Chloroform, ♏v–x, in ice.

Tincture of nux vomica, 10–20 drops, in water, t.i.d.

Heroin, 1 per cent. solution, 10 drops, t.i.d.

Codeine, gr. ¼–1, t.i.d.

Morphine hypodermically, gr. ⅛.

Schlesinger's solution (see Part 11).

Gastrostomy, if permitted by the patient, should be performed only when swallowing is impracticable. If deemed feasible, an œsophageal tube may be passed over a silk thread or piano wire as a guide, as described by Sippy under Œsophageal Stenosis and Stricture, and the upper end of the tube fixed in the mouth by cords attached to the ear or elsewhere. Hill's styletted oro-œsophago-gastric intubation tube is use-

ful. It is inserted through the œsophagus after dilating the stricture, and is fastened to the teeth. At first liquids are fed through the tube from a funnel, but later food may be swallowed beside the tube, "owing to the continuous bougie effect on the stricture."

Recently the use of radium (*q.v.*) has proved to be of great palliative value. One may use 50 to 200 mg. of radium salt screened in platinum, 2 mm. thick, and enclosed in a rubber tube, 2 mm. thick. The rubber tube, attached to a flexible silver style, is inserted into the stricture by means of the œsophagoscope aided by radiography and the bismuth meal (2 to 4 ounces of bismuth sulphate suspended in mucilage of acacia or in milk).

It may be necessary first to dilate the stricture to permit of the entrance of the radium tube. A general anæsthetic is desirable. Hill and Finzie, using 100 mg. in a platinum screen 2 mm. thick, allow the tube to remain in for twelve hours. If the stricture is long, the tube may be pulled up from its primary low position for 2 to 3 cm., and allowed to remain for another twelve hours, if tolerated. Morphine and atropine should be given while the tube is in place. After six weeks another application is usually required, preceded by an œsophagoscopic examination.

Radium therapy is applicable only to patients of fair general health, with the growth limited to the œsophagus, and no greater than 5 to 6 cm. in extent.

Cohnheim says that potassium iodide should be given in every case, because of the possibility of syphilis.

Cancer of the Pancreas.—Cancer of the pancreas is manifested by epigastric pain, dilatation of the gall-bladder and progressive jaundice, unless the body or tail of the pancreas is alone involved, cachexia, gastro-intestinal disturbances, and sometimes glucosuria. A tumor is not often evident. [In gall-stone obstruction of the common duct, the gall-bladder is usually contracted.]

The disease is fatal in from two months to two years, very rarely four years.

Treatment.—If the stools are fatty, showing that the pancreatic duct is obstructed, prescribe an emulsion of fresh pig's pancreas, or pancreatin.

℞ Pancreatini,
Sodii bicarbonatis..... aa gr. vii

Make thirty such pills coated with keratin or salol-shellac (to prevent destruction of the pancreatin by the acid gastric juice).

Sig.—One pill t.i.d.p.c.

Surgery may be attempted, either for the removal of the growth, or for the relief of certain symptoms, *e.g.*, cholecystenterostomy for jaundice; gastroenterostomy for compression of the pylorus, with resulting gastrectasis and persistent vomiting.

Cancer of the Rectum.—See Rectal and Anal Tumors.

Cancer of the Skin.—See Skin Diseases, Part 5.

Cancer of the Stomach.—Cancer of the stomach appears usually after the age of forty years, with symptoms of dyspepsia, viz., anorexia, coated tongue, flatulence and eructation of gas, the sensation of fullness after eating, and pain; later vomiting and sometimes hæmatemesis occur, together with anæmia and progressive loss of weight and strength. A tumor may sometimes be detected on inspection, palpation, and inflation of the stomach (see under Dilatation of the Stomach). The stomach contents early show the presence of lactic acid and the long, thread-like Boas-Oppler bacillus, and usually persistent diminution of hydrochloric acid (many tests should be made) except when the cancer is engrafted upon ulcer. The vomitus has the appearance of coffee-grounds when blood has been retained in the stomach for some time. Both the stomach contents and the stools should be examined microscopically and by means of the Benzidin test (see under Gastric Ulcer) for occult bleeding (see Dyspepsia for gastric technique and analysis). Ascites and œdema of the extremities sometimes occur.

A bismuth X-ray examination gives important information. Two to four ounces of bismuth sulphate suspended in mucilage of acacia or milk are given on an empty stomach, say at 5 A. M., and six hours later the patient is radiographed in the upright position. The stomach should then normally be empty. If bismuth is still present, it indicates pyloric obstruction. A second bismuth meal is now given and frequent radiographs taken with the tube focussed upon the third lumbar vertebra, taking care to exert no pressure upon the stomach. (Cabot.)

The signs of Carcinoma, according to Epplen, are: (1) filling defect, the result of an excess of tissue which diminishes the cavity of the stomach; (2) diminished size of the stomach; (3) absence of peristalsis in the diseased portions; (4) residue in an acid stomach that shows normal shape and tonicity; (5) assumption of the steer-horn shape of stomach; (6) an incisura on the

lesser curvature; (7) a large stomach plus filling defects; (8) a stiffened gaping pylorus; (9) with a gaping pylorus, achylia plus well-advanced movement of the six-hour meal.

Treatment.—An exploratory operation should be performed at once if cancer is suspected. An early partial or complete gastrectomy may possibly be curative. Palliative operations are gastro-enterostomy, gastrostomy, and jejunostomy.

The diet in gastric cancer should not be restricted in the daily amount, but small quantities of soft, easily digestible food leaving no residue should be allowed at short intervals, *e.g.*, vegetable purées, well cooked, mashed, and freed from fibres, skins, shells, seeds, etc., especially potatoes, carrots, turnips, spinach, cauliflower, artichoke, asparagus tops, beans and peas; also vegetable soups, well-cooked cereals, such as rice, barley, oatmeal, wheat, arrowroot, sago tapioca, noodles, macaroni; milk, buttermilk, koumyss (see Part 11), cream, junket, custards, eggs, cocoa, coffee, tea, stale bread, butter, olive oil, mayonnaise salad dressing, scraped meat, minced chicken or other finely divided meats freed from connective tissue and cartilage, stewed tripe, and wines, diluted and in small amounts. Where the digestion is very poor the following foods are serviceable, namely, bovinine, beef tea, meat extracts, somatose (3 to 4 teaspoonfuls daily, cooked in milk or soups), the vegetable albumoses, neutrose and tropon, and various other peptones and infant foods (Mellin's, Liebig's, Benger's, Allenbury's).

Prescribe, one hour before each meal, some alkaline mineral water, or a cup of hot water containing a quarter teaspoonful of sodium bicarbonate, and immediately before the meal, a stomachic (see Anorexia), for the purpose of stimulating the gastric secretions and the appetite. For anacidity, which is usually present, prescribe dilute hydrochloric acid (or dilute phosphoric acid—Eichhorst), gtt. x–xx, in three ounces of water, after meals, with or without pepsin, gr. viiss, and maltine, gr. iss. The hydrochloric acid may be repeated three or four times at hourly intervals (Croftan). If acids increase discomfort, substitute the following mixture:

℞ Bismuth subcarbonatis,
Sodii bicarbonatis,
Magnesii carbonatis. aa gr. lxxx (gr. x per dose)
Tincturæ belladonnæ ♏xl–lxxx (♏v–x per dose)
Tincturæ nucis vomicæ..... ♏lxxx (♏x per dose)
Aquæ, q.s., ad..... ℥iv
M. Sig.—Shake well and take one tablespoonful t.i.d.p.c.

The following drugs are well recommended:

℞ Condurango corticis pulveris..... gr. xxx
Mitte talis pulveres..... No. 30.
Sig.—One powder four or five times a day, before meals.

℞ Fluidextracti condurango.
Sig.—One-half to one teaspoonful four or five times a day, before meals.

℞ Fluidextracti condurango..... ℥xii (♏xlv per dose)
Strychninæ sulphatis gr. ½ (gr. ¼₈ per dose)
Acidi hydrochlorici diluti..... ℥iii (♏xi per dose)
Infusi gentianæ compositi, ad..... ℥viii
M. Sig.—Tablespoonful in a wineglass of water after meals, to be taken through a tube. (Modified from a prescription of Hemmeter's.)

℞ Methyl thioninæ hydrochloridi (methylene blue), gr. iii.
Mitte talis caps. gelat. No. 30.
Sig.—One capsule t.i.d. (Einhorn.)

℞ Trypsini..... gr. viss–xx
Mitte talis caps. gelat. No. 30.
Sig.—One capsule t.i.d. (To dissolve the tumor cells.)

For flatulence, due to the decomposition of retained food:

℞ Chlorali hydrati..... ℥iss (gr. xi per dose)
Aquæ..... ℥iv
M. Sig.—Tablespoonful in water every two or three hours. (Ewald.)

℞ Creosoti, ♏i, in water, t.i.d.p.c. (Yeo.)

℞ Thymolis, gr. i, in capsula, t.i.d.p.c.

For vomiting, withdraw food by mouth, and substitute rectal feeding if necessary. Wash out the stomach, apply heat or cold to the epigastrium, and administer some one of the remedies enumerated under Vomiting. Morphine is of value.

For hæmatemesis, withdraw food by mouth, keep the patient absolutely quiet, elevate the foot of the bed, apply a suspended ice-bag to the epigastrium, give ice to suck but not to swallow, and administer adrenalin chloride, 1:1000 solution, 10–20–30 drops in a little water, every hour or two for about three or four doses. Give morphine if there is much peristalsis. To avoid thirst and peristalsis, normal saline solution may be given per rectum by the Murphy drop method; one-half to one pint may be given night and morning.

For pain employ lavage, hot wet compresses, and the following analgesics: Spirits of chloroform, methylene blue, chloral hydrate, orthoform, anæsthesin, bismuth, codeine, morphine, Schlesinger's solution. (See Part 11 for drug formulæ, etc.).

℞ Morphinæ..... gr. ⅛
Sodii bicarbonatis..... gr. v
Bismuthi subnitratis..... gr. v–x (Osler)

For constipation employ laxatives and enemas.

For diarrhœa employ rest in bed, lavage, hot abdominal applications, and astringents.

Thorough lavage of the stomach, once or twice daily in the morning on arising and before the last meal, is of great value. The patient may improve wonderfully after lavage is begun. After each lavage, two or three ounces of warm oil may be introduced into the stomach. (Cohnheim.)

Cancrum Oris.—See under Stomatitis, Gangrenous.

Canker Sores.—See Stomatitis Herpetica.

Capillary Bronchitis.—See under Bronchopneumonia.

Carbon Monoxide Poisoning.—See Asphyxia and Poisoning.

Carbuncle.—See Skin Diseases, Part 5.

Cardiac Arrhythmia.—See Arrhythmia, Cardiac.

Asthma.—See Cardiac Insufficiency.

Degeneration.—See Myocarditis.

Dilatation.—See Cardiac Insufficiency or Failure.

Extrasystoles.—See Arrhythmia, Cardiac.

Failure.—See under Cardiac Insufficiency or Failure.

Fibrillation.—See Arrhythmia, Cardiac.

Flutter.—See Arrhythmia, Cardiac.

Cardiac Insufficiency or Failure.—The symptoms of chronic cardiac insufficiency vary in severity from an undue proneness to mental or physical fatigue, or shortness of breath or a sense of oppression on slight exertion, to the following more persistent, although variable symptoms, *e.g.*, anorexia, indigestion, perhaps even nausea and vomiting, abdominal and thoracic pain and oppression, pain down the arms, sometimes throbbing, rarely palpitations, the heart's action rapid, sometimes slow, perhaps feeble, sometimes irregular, perhaps dull headache or dizziness, perhaps cough, sometimes hæmoptysis, especially in mitral disease, dyspnœa, especially orthopnœa, sometimes paroxysmal dyspnœa or cardiac asthma, signs of congestion at the bases of the lungs, perhaps enlargement and pulsation of the liver, sometimes jaundice, nervous symptoms, (restlessness, insomnia, fainting, melancholia, delusions, hallucinations, mania), usually constipation, perhaps hemorrhoids, cyanosis, pallor, dropsy, and diminished excretion of urine which shows albumin, casts, and increase of acidity, color, and specific gravity. Sudden death may be the first symptom.

Percussion reveals an enlarged area of cardiac dulness, and fluoroscopy a dilated heart. The entire or deep area of cardiac dulness may be mapped out best by means of auscultatory percussion, with the tip of the stethoscope placed above and within the apex beat. The right border of the heart normally extends just beyond the sternum at the fourth interspace on the right; and on the left it extends from the left sternal margin in the second interspace diagonally outward and downward to just outside of the apex beat, which normally lies in the fifth interspace, about three inches to the left of the midsternal line, and one-half inch inside the mammillary line. The size of the heart is best ascertained, however, by fluoroscopy. As determined by fluoroscopy, at a distance of seven feet, with the patient in an upright position, the normal male adult heart extends 7–11 cm. to the left of the median line. Women's hearts average about 1 cm. less in each direction. The most generally useful way of ascertaining the size of the heart is by noting the position of the maximum cardiac impulse (by inspection or auscultation), then finding, by palpation, the "point farthest out and farthest down at which any rise and fall synchronous with the heart-beat can be felt." The latter point corresponds to the apex of the heart. (R. C. Cabot.)

Etiology.—(Osler).

A. Causes of Acute or Sudden Cardiac Failure.—Wounds of the heart, spontaneous rupture of the heart; rupture of a valve; rapid effusion of blood or serum into the pericardium, due to rupture of an aneurysm, or of a hydatid cyst, or to acute inflammation; overexertion; entrance of air into the heart, from the uterine veins following parturition, or from operative opening of the veins of the neck, or in caisson disease; very rarely sudden thrombosis within one of the heart cavities; embolism or thrombosis of the pulmonary artery; sudden interference with the coronary circulation, due to embolism, thrombosis, sclerosis, or spasm; sudden asphyxia due to strangulation, a foreign body in the pharynx or larynx, œdema of the larynx, œdema of the lungs, or bronchial spasm; infectious diseases, particularly diphtheria, typhoid fever, acute endocarditis, and septicopyemia; poisons, *e.g.*, phosphorus, cocaine, chloroform, pilocarpine, muscarine, etc., too rapid ascent into high altitudes; nervous, probably vagus, influences, *e.g.*, sudden strong emotion, a tumor contiguous to the vagus or its centre in the medulla, abdominal and laryngeal injuries, thoracic paracentesis.

B. Causes of Chronic Cardiac Insufficiency.—Myocardial disease (parenchymatous, fatty, amyloid, or hyaline degeneration, or brown atrophy, or fibrous myocarditis), due to malnutrition from improper or insufficient food, malignant disease, severe anæmia, leukæmia, diabetes, gout, obesity, gastro-intestinal intoxication (chronic dyspepsia, chronic dysentery), poisoning with arsenic, lead, phosphorus, alcohol, especially beer, tobacco, tea and coffee, infectious diseases, especially streptococcic rheumatism, prolonged high fever, chronic infection (cholecystitis, appendicitis, tonsillitis, nasopharyngitis, suppuration, etc.), neoplasm, gumma, or parasitic disease of the myocardium, disease of the coronary arteries, exophthalmic goitre, chronic worry.

Overwork of the heart, due to valvular heart disease, mental or physical overexertion, excessive venery, adherent pericardium, and peripheral lesions obstructing the aortic or pulmonary circulation, *e.g.*, atheroma of the aorta, syphilitic aortitis with or without aneurysm, arteriosclerosis, renal disease, emphysema, chronic bronchitis, bronchiectasis, pulmonary sclerosis, asthma, chest deformity (kypho-scoliosis), compression of the trachea by a goitre, erythræmia, obesity.

Treatment of Chronic Cardiac Insufficiency (so-called failure of compensation, decompensation, or broken compensation).—Remember first and always that, in heart failure, it is the myocardium, the heart muscle, which is incapacitated, and which we are to treat. The first essential is rest in bed—in a sitting posture if there is orthopnœa. Changes of posture should be made slowly. The diet should be light and bland and administered in small amounts every three hours: egg albumen, beef-juice, milk diluted with lime water or soda water; later—custards, well-cooked cereals, eggs boiled three minutes, stale bread, toast, crackers, zwieback, green vegetables, tender meats, fish, clam and oyster soups, cooked fruit. Liquids should be restricted unless the urine is very scanty and the skin dry. Salt should be restricted. If nausea and vomiting are troublesome symptoms, withdraw all food, except perhaps milk and lime water, and give small bits of ice to suck, or Apollinaris water, or iced champagne, and place a large mustard poultice over the epigastrium. Give required medicines hypodermically under these circumstances.

Administer in the beginning a brisk calomel purge, gr. ii–iii–v–x, in a single dose or divided doses, with a little sodium bicarbonate to avoid digestive disturbance at night, followed by a saline—Rochelle salt, ℥ss, or Epsom salt, ℥ss–i, or compound jalap powder, ℥ss, in the morning, at least one hour before the first meal. Hirschfelder prefers rhubarb and calomel, aa gr. v, at night, as being more certain in its action.

As soon as the bowels have been emptied, a cardiac stimulant or tonic may be given.

℞ Tincturæ digitalis..... ℥i

Sig.—Minims 15–20, well diluted, every three hours, after eating, for about two days, or until diuresis is established and the heart slowed; then minims x–v, t.i.d., until compensation is restored. The drug may have to be continued, in appropriate dosage, indefinitely. (See Part 11.) (To lessen nausea, Hirschfelder administers the drug in half a glass of water flavored with tr. aurantii amaræ, ℥i, or in lemon and albumen water, or a bitter, such as comp. tr. of gentian or cardamom, or tr. of quassia or calumba, ℥ss of either.)

℞ Infusi digitalis recentis..... ℥viii

Sig.—One-half ounce every three hours for two days, then, ℥iiss t.i.d.

℞ Fluidextracti digitalis..... ℥ss

Sig.—Five minims t.i.d. until the pulse rate reaches eighty; then discontinue. (Hirschfelder.)

℞ Digipurati, tabellæ no. 32 (one tablet = gr. iss of digitalis leaves; it contains digitoxin, and digitalin, but no digitonin).

Sig.—3 or 4 tablets a day, gradually reduced.

℞ Digitalini veri (a mixture of pure digitalin, digitalein, and digitonin), gr. $\frac{1}{50}$, hypodermically, every three or four hours.

℞ Digitalini Germanici (Merck), gr. $\frac{1}{10}$–$\frac{1}{2}$, t.i.d., by mouth or hypodermically. The best of the digitalins, says Forchheimer.

℞ Digitalini (Homolle's and Nativelle's granules; French digitalin; consists almost of pure digitalin). Begin with one-half a granule; the next day give, perhaps, a whole granule, (0.25 mg.) watching the effects carefully. Intermit the drug every third or fourth day. Very effectual. (Allbutt.)

℞ Digitalone (tested pharmacologically), dose gtt. v–xx.

Digitalis may be given by rectum in normal saline solution (℥i ad Oi) or in starch solution. Given by mouth the effects are not manifested before twenty-four to seventy-two hours. Small doses may, if required, be continued for months and even years.

Digitalis is particularly indicated in dilatation of the heart, accompanied by dyspnœa, cyanosis, dropsy, and a rapid irregular pulse, (auricular fibrillation, *q.v.*). It is, as a rule, contraindicated when the pulse is slow, when extra-systoles are present, and according to F. W. Price, when there

is a forcible apex-beat and bounding arteries. It is also contraindicated in pulsus alternans (*q.v.*), and in conditions in which the heart-muscle is acutely poisoned, *e.g.*, in acute infectious disease, acute fatty degeneration, and other intoxications. It is not contra-indicated, says Osler, in high arterial tension.

Toxic effects of digitalis are as follows: slowing, (sometimes quickening), irregularity (especially the occurrence of extra-systoles and coupling of the beats), and weakness of the pulse, falling blood-pressure, faintness, nausea and vomiting, headache, diarrhœa, diminished urinary excretion, bad dreams. When these occur, discontinue the drug until the pulse-rate begins to increase again (usually several days). The urine should be measured each day while administering digitalis. The drug should be given until diuresis is established and the heart slowed. If digitalis fails, it should not be continued, but some other remedy should be tried.

℞ Pulveris digitalis recentis,
Pulveris scillæ,
Massæ hydrargyri, vel hydrargyri subchloridi ..... aa gr. i
Confectionis rosæ ..... q.s.
Fiat pilula una, mitte talis x.

Sig.—One pill every eight hours. (Guy's Pill, highly recommended; both digitalis and squills are cardiac stimulants, mercury is both laxative and diuretic).

℞ Strychninæ, gr. 1/40–1/10, hypodermically or by mouth, in combination with digitalis. Or gr. 1/60 may be given every three or four hours, until facial twitching occurs.

Strychnine is of particular value as a respiratory stimulant in cardiac dyspnœa and Cheyne-Stokes breathing.

Quinidine: See Drugs, Part 11.

Much less useful drugs than the preceding are the following:

℞ Tincturæ strophanthi ..... ℥ss

Sig.—Minims ten in water or cocoa every three or four hours.

Osler says it should be given intramuscularly or intravenously since its effect by mouth is uncertain: tr. strophanthi, ♏x or strophanthin, gr. 1/100, every twenty-four hours for two or three days. Strophanthus is said to be more effectual than digitalis in the presence of fever. It causes much less vaso-constriction. It should not be given twenty-four to thirty-six hours following digitalis; but it may be given at the time digitalis is administered by mouth.

℞ Infusi adonis vernalis recentis ..... ℥viii
Sig.—℥i–iv every two to four hours.

℞ Fluidextracti convallariæ majalis .. ℥ss
Sig.—♏v–x four times a day. A better vaso-constrictor than strophanthus.

℞ Caffeinæ ..... gr. i
Fiat pulvis una; mitte talis 15.
Sig.—One powder every hour. (Allbutt.)

℞ Caffeinæ ..... gr. i–v
Sodii benzoatis vel salicylatis .... gr. iv–x
Tincturæ aurantii ..... ♏xx
Aquam chloroformi, ad ..... ℥i
M. Sig.—One ounce three or four times daily.

Caffeine is often advantageously given with digitalis. It tends to counteract digitalis arrhythmias (W. M. Barton). But it is apt to produce restlessness and insomnia.

℞ Potassii acetatis ..... gr. xv
Aceti scillæ ..... ♏xv
Syrupi pruni virginianæ ..... ♏xl
Aquæ pimentæ ..... ℥i
M. Sig.—One ounce three or four times daily. (Allbutt.)

To tide the patient over emergencies, inject hypodermically one of the following rapid stimulants:

Ether, ℥i.

Camphor, gr. i–ii, in olive oil ♏xv, sterilized by heat, every two to three hours; or spirits of camphor, ♏xv. Camphor should be given deep into the muscles.

Strychnine, gr. 1/20–1/10 (contraindicated if the arterial tension is high).

Digitalin, German, (Merck) gr. 1/10–1/2, every three to four hours.

Strophanthin, Amorphous, gr. 1/120, intravenously, repeated if necessary, in twelve hours (contraindicated if the patient has been taking digitalis; but it may be given when digitalis is first begun by mouth).

Nitroglycerin, gr. 1/100, injected with strophanthin, is very effectual.

Caffeine sodium salicylate or caffeine sodium benzoate, gr. iss–iii, two to three times daily.

Also, by mouth—Hoffman's anodyne, one teaspoonful on sugar; or aromatic spirits of ammonia, one-half to one teaspoonful, well diluted, every two to three hours.

Or, oxygen inhalations (see Pneumonia). The oxygen may be generated from a gasogen containing oxylith (Na_2O_3) or sodium perborate, brought in contact with water and a fountain syringe used as an inhaler, as described by Hirschfelder. The oxygen may be stored in a fifteen-litre gas bag. (Fig. 30).

Osler highly recommends the extraction of 6–10–20–30 ounces of blood in cases with venous engorgement, cyanosis, and orthopnœa. Venesection is especially indicated in pulmonary œdema, along with

dry cupping (*q.v.*) and mustard poultices. It is not indicated, however, in aortic incompetency. Six to twelve leeches placed over the right ventricle or the liver, may be substituted for venesection.

For anæmia prescribe iron (the ammoniocitrate, phosphate, or tartrate) and arsenic

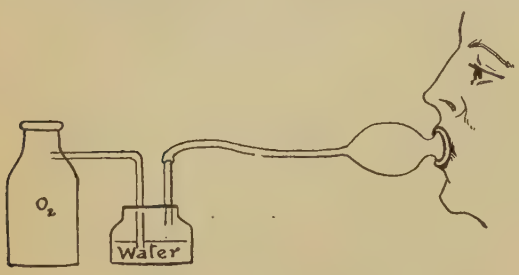


Fig. 30.—Oxygen inhalation.

(Fowler's solution), as soon as the acute cardiac symptoms have subsided.

℞ Ferri et ammonii citratis..... gr. v–x
Tincturæ nucis vomicæ..... ♏viiss
Tincturæ calumbæ..... ʒi
Aquæ pimentæ, q.s., ad..... ʒi
M. Sig.—One ounce t.i.d. (Allbutt.)

For Throbbing, Palpitation, and Pain.—Causal influences are flatulence, coffee, tea, tobacco, high blood-pressure, anæmia, neurasthenia, hysteria. See Tympanites, for the correction of flatulency. For high blood-pressure prescribe nitroglycerin, or sodium nitrite, or erythrol tetranitrate (see Part 11). An ice-bag over the precordium, tied around the chest and shoulders with an elastic four-tailed bandage, and changed every hour or two, may afford relief. The application of cold slows the heart and raises the blood-pressure, and may be used as a routine except in cases of marked fibrous or fatty myocardial degeneration (Hirschfelder). Other reflex measures are the application of a belladonna plaster, a blister (see Cantharides in Part 11), and the faradic and sinusoidal currents to the precordium.

Drugs recommended are: Quinine or quinine valerianate, gr. i–iii in capsule; sodium bromide, gr. xv–xxx, t.i.d., in milk or soda water; morphine, gr. ⅛; potassium iodide, gr. x, well diluted, t.i.d., (for pain); (see Part 11).

For Flatulence.—See Tympanites.

For Sleeplessness, Irritability, and Psychical Disturbances.—See Insomnia. Osler highly praises morphine (gr. ⅛ hypodermically, say every other night) for its calmative influence in cardiac insufficiency. For the nocturnal dyspnœa and restlessness he says it is invaluable.

For Dyspnœa.—As aggravating factors think of flatulence, ascites, hydrothorax, and congestion or œdema of the lungs. Morphine, gr. ⅛, and strychnine in full doses (gr. 1/30–1/12; strychnine is a respiratory stimulant) are well recommended.

For Enlarged and Painful Liver.—Prohibit meat. Purge the patient. Guy's pill (*q.v.* in Part 11) is well recommended. A mustard poultice, ice-bag, hot water bag, dry or wet cups, or six to ten leeches, may be applied. In applying a wet cup, first disinfect the skin by means of tincture of iodine, then apply a dry cup as described under Cupping; now scarify the congested skin with an instrument consisting of lancet blades on a spring, and reapply the dry cup.

For Bronchitis.—Syrup of squills, mxxx–xl, three or four times daily, is both an expectorant and cardiac stimulant. Mustard poultices, turpentine embrocations, (see Part 11) dry cupping, and inhalations of steam medicated with compound tincture of benzoin, ʒi ad Oi, or creosote, gtt. x–xv ad Oi, are useful measures. Allbutt says: "Urgent bronchitis is best treated by large doses of ammonium carbonate":

℞ Ammonii carbonatis..... gr. xv–xx
Sodii iodidi..... gr. ii
Tincturæ scillæ..... ♏xv
Aquæ camphoræ vel infusi senegæ, q.s. ad..... ʒi
M. Sig.—One ounce 3 or 4 times daily. (Allbutt.)

Ammonium chloride, up to 75 grains a day (Ortner), is also of value. Codeine or heroin is of service when the cough is a dry, reflex, irritating cough.

For Pulmonary Œdema.—Dry cupping, mustard poultices, venesection.

For Persistent Dropsy.—Salt should, of course, be withdrawn, and fluids restricted. Purgation should be resorted to: Epsom salts, ʒss–i, in concentrated solution, one hour before breakfast; or ʒss, in one ounce of water, every hour until effectual; or compound jalap powder, ʒss, once or twice a day; or calomel, gr. iii, every six hours for three or four days; or elaterium, gr. 1/12–½, twice or thrice a day. Useful diuretics are caffeine sodium-salicylate or caffeine sodium-benzoate, dissolved in water, gr. xx–xxx daily; theobromin, gr. viiss, every three hours for six days (Tyson); diuretin, gr. x–xx, dissolved in hot water on using, three or four times a day; theophyllin or theocin, gr. iii, well diluted, t.i.d., for one day (the best, says Rowntree); agurin, gr. xv–xlv a day; potassium acetate, citrate, or bitartrate, not more than one ounce a day; Guy's or Niemayer's pill (calomel, digitalis, and squills, aa gr. i). Diuretics

should be administered for only one or two days at a time.

A marked hydrothorax or ascites should, perhaps, be tapped before digitalis is administered (see Ascites, and Pleurisy.)

The legs may have to be punctured. After thoroughly washing the legs with soap and hot water, rinsing, drying with sterile gauze, and painting the site of puncture with tincture of iodine, make an incision one or two inches long completely through the skin, perhaps best on the dorsum or external margin of the foot below the malleolus (Croftan). Anoint the skin with sterile oil to shed the fluid. Cover the wound with sterile gauze and cotton. The patient should be in a sitting posture. Bier's suction cups may be used to assist the flow. Instead of the incision one may employ Southey's or Curschmann's tubes, or aspirating needles with boiled rubber tubing attached, leading to a basin of boiled water on the floor, thus establishing siphonage (Romberg). The needles may be inserted on either side of the tendo Achillis, and allowed to remain twenty-four to forty-eight hours.

After acute symptoms have subsided, and the patient can sit up in bed without discomfort, the employment of non-fatiguing exercises is of great benefit as an after-treatment in restoring tone to a convalescent heart that is not devoid of reserve power.

First, passive movements in bed are employed for five or ten minutes, two or three times a day, and these are gradually increased in number and intensity. Then, after several days of rest out of bed, slow active movements, assisted by an attendant, are begun, no movement to be repeated twice in succession. The movements employed are all the natural joint movements in all directions; but the arms should not be raised high above the head, because of the increased hydrostatic pressure in the vena cava thereby induced. Schott's regulations governing resistance exercises are as follows:

1. "Resistance movements include abduction, adduction, flexion, extension, and rotation in a vertical, horizontal, or lateral direction."

2. "These movements should so alternate that new groups of muscles are continuously made to act in sequence, thus avoiding fatigue."

3. "The resistance should be made by the operator as slowly and gently as possible but with as much firmness and muscular power as the patient's physical condition will warrant."

4. "The operator should never grasp the patient's limb tightly, but should oppose its movement by firm counter-pressure against the advancing side, thus retarding the movement but always permitting the patient to retain the 'balance of power'."

5. "The operator should change his resistance whenever the direction of the physical force is changed."

6. "To gain a well-balanced and uniform effect, these exercises should always be bilateral."

7. "The operator should closely watch the patient's breathing and circulation and at the slightest sign of embarrassment should stop the exercises. The patient should never be allowed to hold his breath while exercising."

8. "A pause of one or two minutes should be allowed between each exercise in order to avoid any fatigue. The patient may sit down during the pause, especially during the latter half of the seance."

9. "The length of time devoted to each seance should be about a half-hour. At the end of that period it will frequently be found that the number of heart-beats has been reduced from ten to fifteen per minute and that the area of cardiac dulness has been made to contract an inch, more or less."

10. "After the seance is finished the patient should rest quietly on a couch for at least fifteen minutes."

In place of the resisted movements the patient may practice resistance himself by the slow simultaneous contraction of antagonistic muscles.

Shortly after the use of resisted exercises the employment of stimulating salt and carbon dioxide (Nauheim) baths may be instituted:

Sodium chloride	8 pounds
Calcium or magnesium chloride	2 pounds
Sodium bicarbonate	1¾ pounds
Sodium bisulphate (yielding CO_2)	2½ pounds
Bath water at 90° to 95° F.	40 to 45 gallons

Protect the tub against the bisulphate by means of a large rubber cloth. Add the salts to the bath in the order given. Begin with half-strength, or less, of the salts, and allow the patient to remain in the bath only fifteen minutes, watching him closely for an increase of cyanosis, faintness, or excitement. After the bath, rub the body vigorously with hot towels until the skin glows. The patient should then rest recumbent for at least an hour. The bath should not be given less than one or two hours after a light meal, or four or five hours after a heavy meal. It should be preceded by a cup of warm milk, cocoa, or broth. The skin should take on a healthy glow within a few minutes after the bath; and if this

does not occur after several trials, the baths should be discontinued.

In place of the carbon dioxide baths one may employ electric baths, using either alternating or sinusoidal currents and large copper or zinc electrodes, and a current strong enough to produce prickly sensations but no discomfort.

Massage is also beneficial.

Finally, before the patient returns to his vocation (which should be changed if it is too strenuous), he should take daily graduated walks or climbs, interrupted by frequent rests.

Days of rest must be occasionally interposed in the treatment. The latter lasts from three to six weeks in mild cases to several months in severe cases. Both the exercises and the baths increase the tone of the heart, raise the blood-pressure, and slow the pulse rate. It should be remembered that they are to be employed only as an after-treatment, to strengthen a convalescent heart, and that the slightest fatigue or increased breathing should be avoided. (Schott-Hirschfelder.)

In the stage of compensation the patient should lead a quiet, temperate life, observe regular hours of eating and sleeping, sleep at least ten or eleven hours at night, keep the bowels regular (employing if necessary mild laxatives, such as compound licorice powder, or aromatic cascara sagrada, or compound laxative pills (see Part 11); take daily moderate exercise short of fatigue, breathlessness, or distress, take a daily tepid bath of about ten or fifteen minutes duration, breathe fresh air day and night, and eat a fair abundance of simple, bland, and nourishing food, such as milk, buttermilk, eggs, raw or boiled three minutes, stale bread and fresh butter, well-cooked farinaceous gruels, potatoes in moderation, fresh vegetables, meat, and stewed fruits, if he is feeble; whereas the diet should be restricted, especially as to carbohydrates, if the patient is stout. Fluids and salt should be restricted. Foods that are likely to cause flatulency should be forbidden, *e.g.*, cabbage, peas, beans, lentils, sauerkraut, starchy foods, such as potatoes, in excess, and ærated beverages, meat extractives, liver, kidney, sweetbreads, raw and smoked meats, condiments, spices, tea, coffee, and tobacco should also be avoided. They irritate the heart and raise the blood pressure. Brandy or whiskey may, perhaps, be allowed in moderation. The patient should rest for one hour before and after meals.

Any focus of infection, such as diseased tonsils, pyorrhœa, sinusitis, pelvic disease, bronchitis, etc., should be eradicated, in order to diminish the risk of acute endocarditis. High altitudes are best avoided.

Cardiac Intermittency.—See Arrhythmia, Cardiac.

Irritability.—See Arrhythmia, Heart-Strain, and Palpitation.

Neurasthenia.—See Neurasthenia, and Heart-Strain.

Overstrain.—See Heart-Strain.

Palpitation.—See Palpitation.

Strain.—See Heart-Strain.

Cardialgia; Heartburn.—Gr. καρδία heart + ἄλγος pain. See Hyperacidity.

Cardiospasm and Œsophagismus.—Gr. καρδία heart: cardiac end of the stomach; οἰσοφαγος œsophagus: œsophageal spasm.

Functional spasmodic contraction of the œsophagus or cardia, causing dysphagia, may be acute, *i.e.*, of sudden onset and transient, or it may be chronic. Chronic spasm may be followed by œsophageal dilatation, *q.v.* The cardia is oftenest affected.

The stomach tube and œsophageal bougies may be passed without difficulty, the larger bougies even more easily than the small ones. It may sometimes be necessary, on introducing the bougie up to the obstruction, to wait a moment until the spasm relaxes. If a sound cannot be passed, anæsthetize the patient. Exclude inflammatory or malignant stricture, an impacted foreign body, pressure from a goitre or aneurysm, etc. (See Œsophageal Stenosis and Stricture).

Etiology.—Hysteria; neurasthenia; hypochondriasis; epilepsy; chorea; excitement or strong emotion; central nervous disease; such reflex influences as tonsillar disease, foreign body in the ear, intestinal parasites, tuberculous laryngitis, gastric, uterine, and peritoneal disease, gall-stones, renal calculus, chronic pancreatitis, pregnancy, œsophageal disease, tumors and aneurysm; gouty diathesis; arteriosclerosis; plumbism; uræmia; tobacco and alcohol addiction; hard food; highly seasoned food; too rapid swallowing; habitual air swallowing with resulting gaseous distention of the stomach; dryness of the throat caused by atropine; strychnine poisoning; hydrophobia; tetanus. According to William Hill, an œsophagoscopic examination will reveal, in practically all cases of suspected primary cardiospasm, kinking or angulation, tumefactive œsophagitis, paresis—due to diphtheritic or influenzal neuritis or to lesions in the pons and medulla, *e.g.* hemorrhage, tumors, bulbar paralysis, multiple sclerosis, tabes, dementia paralytica, or an organic stricture, all relieved by bougieing. Röpke, however, affirms that most examples of

cardiospasm or dilatation of the œsophagus are of nervous origin.

Treatment.—Attend to the underlying cause. In acute cases try "having the patient take deep inspirations and restrain expiration," also "pressure upon the lower end of the sternum" (Forchheimer), and sedative drugs, *e.g.*, bromide, antipyrine, ammonium or zinc valerianate, validol, camphor or camphor monobromate, atropine in ascending doses until flushing is produced, codeine, morphine (see Part 11 for drug formulæ. etc.). The passage of an œsophageal bougie is effectual.

Chronic cases are treated as follows: The diet should be soft or liquid, and olive oil may be taken as a lubricant before meals. Feeding through a tube may be required. A dilated œsophagus may have to be irrigated before each feeding. The systematic passage of a sound may be eventually effectual; but the use of Sippy's inflatable rubber bag or balloon to paralyze the contracted muscles of the cardia is preferable.

Connected with the bag is a blood-pressure apparatus, 100–150 mm. pressure being sufficient and perhaps safe. Air pressure, or water pressure by means of a fountain-syringe suspended no higher than five to seven feet above the cardia (to avoid rupture) is used. The circumference of the limiting silk cover on the rubber balloon should not ordinarily exceed 4 to 4½ inches in adults. Before inserting the balloon the stricture should be examined with an œsophagoscope. In difficult cases, the spiral introducer described under Œsophageal Stenosis and Stricture, may be passed over the silk thread as a guide, first cocainizing the pharynx to prevent vomiting. (Sippy.)

T. A. Johnson has introduced the following improvement:

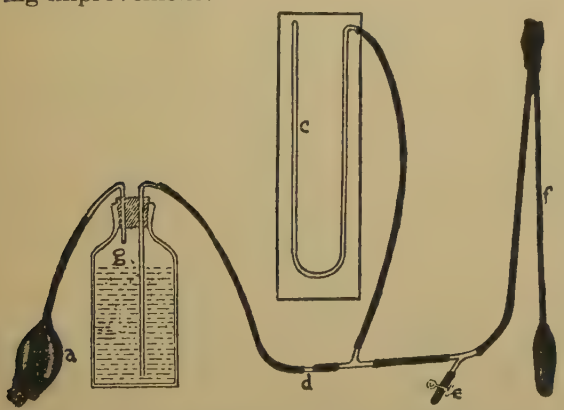


Fig. 31.—Diagram of complete apparatus for dilating the cardia (Johnson). a, Hand-bulb of mercury manometer; b, water in pressure bottle; c, mercury manometer; d, glass capillary tube; e, emergency valve; f, Sippy cardiospasm dilator; g, compression chamber above water. Courtesy *Practical Medicine Series*.

Sippy says: "One good stretching may suffice for years."

The cardia has been dilated through a gastrostomy opening by means of the finger or the rubber-covered blades of a pair of dressing forceps. In a rebellious case of Röpke's, complete cure was obtained by drawing down the lower end of the œsophagus through an abdominal incision, and freeing it from all the surrounding tissues.

In persistently recurring cases, it may be necessary to feed the patient by rectum for a time (see Rectal feeding).

Carpo-Pedal Spasm.—L. *carpus*, wrist; Gr. καρπός; L. *pes*, foot. See Tetany.

Carrel's Treatment of War Wounds.—See Wounds.

Cataphoresis.—See under Inflammation.

Catarrhal Cholangitis.—L. *catar'rhus*, from Gr. καταῤῥεῖν to flow down; Gr. χολή bile + ἀγγεῖον vessel + -ιτις inflammation. See Jaundice, Catarrhal.

Catarrhal Fever; Cold.—See Nose Diseases, Part 8.

Jaundice.—See Jaundice, Catarrhal.

Epidemic.—See Jaundice, Infectious.

Stomatitis.—See Stomatitis, Catarrhal.

Catarrh, Autumnal.—See Hay Fever.

Biliary.—See Jaundice, Catarrhal.

Gastric.—See Gastritis.

Intestinal.—See Enteritis.

Nasal.—See Nose Diseases, Part 8.

Pharyngeal.—See Throat Diseases, Part 9.

Post-nasal.—See Throat Diseases, Part 9.

Cecum Mobile.—See under Constipation, Chronic.

Cellulitis of the Neck.—L. *cel'lula*, cell. See Ludwig's Angina.

Cellulitis of the Pharynx.—See Ludwig's Angina.

Cephalhæmatoma.—Gr. κεφαλή head; αἷμα blood.

A subperiosteal blood-tumor occurring during or shortly after parturition, usually over the right parietal bone and circumscribed by the suture boundaries of the bone, unless the hemorrhage happens by chance to be subaponeurotic. The tumor is first tense, and later fluctuates. It differs from a meningocele in that the latter may be emptied by pressure and swells when the child cries.

Treatment.—If small, protect the part with cotton pads and a hood. If large, or infected, incise, and evacuate the blood.

Cephalodynia.—Gr. κεφαλή; head + ὀδύνη pain. See Myalgia.

Cerebellar Ataxia.—L. diminutive of *cer'ebrum*, brain. See Ataxia.

Lesions.—See Brain Localization.

Cerebral Abscess.—L. cer'ebrum, brain. See Brain Abscess.

Arteriosclerosis.—See Arteriosclerosis.

Compression.—See Concussion, Contusion, and Compression of the Brain.

Concussion.—See Concussion, Contusion, and Compression of the Brain.

Contusion.—See Concussion, Contusion, and Compression of the Brain.

Diplegia.—Gr. δίς twice + πληγή stroke: bilateral paralysis. See Spastic Paralysis.

Embolism.—See Apoplexy.

Hemorrhage.—See Apoplexy, Concussion, Contusion, and Compression of the Brain, and Hemorrhage, Meningeal, in the New Born.

Localization.—See Brain Localization.

Nerve Affections.—See Cranial Nerve Affections.

Paralysis of Children.—See Part 10, on Orthopædics.

Peduncle Lesions.—See Brain Localization.

Softening.—See Apoplexy.

Thrombosis.—See Apoplexy.

Tumor.—See Brain Tumor.

Cerebrospinal Fever; Epidemic Cerebrospinal Meningitis.—An acute infectious epidemic and sporadic disease of young people, caused by the diplococcus intracellularis or meningococcus (of which there are at least 4 types not serologically related), characterized by inflammation of the cerebrospinal meninges, and the following variable symptoms, viz., abrupt onset with severe headache, tender eyeballs, chills, fever, vomiting, increased reflexes, perhaps convulsions; pulse rapid, sometimes slow and irregular, fever irregular, rigidity of the neck and extremities, sometimes opisthotonous (Gr. ὀ'πισθεν backward + τό'νος stretching), flexures, commonly strabismus, muscular tremors, general pains and hyperæsthesia, great irritability, grinding of the teeth, delirium, stupor, and coma. Herpes commonly occurs. An erythematous roseolar, and petechial or purpuric rash is common. There is a marked leucocytosis. Kernig's sign, or the inability to extend the leg on the thigh, when the latter is placed at right angles to the trunk, is present in other conditions besides cerebrospinal meningitis.

Lumbar puncture should be performed for diagnostic reasons. The procedure is as follows: Turn the patient on the left side with the back bowed and the knees drawn up, the head strongly flexed on the chest, both shoulders at right angles to the surface of the bed (to prevent delignment of the lumbar spine). Sterilize the skin with tincture of iodine. Then cocainize the skin. Insert a sterile aspirator needle, 5 to 10 cm. long and a lumen of 1 to 2 mm. diameter, with stylet (Kerley uses Quincke's needle) into the fourth lumbar interspace (on a level with the iliac crests). Keep at right angle with short axis of body, in the median line, and direct it a little upward. Withdraw needle with a quick jerk. The depth of the tissue to be penetrated is about 2½ cm. in infants and 4 to 6 cm. in adults. The fluid obtained is apt to be under increased pressure (the normal pressure is between 5 and 7.5 mm. of mercury—Webster). Never aspirate, as it is extremely dangerous. To measure the pressure, connect the aspirating needle, as soon as it enters the dura, with a mercury manometer (filled with mercury to the zero point) by means of a rubber tube containing a one per cent. carbolic acid solution, which also fills the limb of the manometer connecting with the rubber tube. Hold the zero point on a level with the aspirating needle. The spinal fluid in epidemic meningitis is usually turbid, and, in the acute stage, contains a predominance of polymorphonuclear leucocytes (lymphocytes predominate in tuberculous meningitis). Stained smears from the centrifuged sediment, and cultures should be made. The technique of preparing and staining smears is as follows:

(a) Collect the sediment on one end of a clean dry slide, and with another slide evenly touching the fluid at an angle of 45° with the first slide, draw the fluid along the first slide with little pressure, maintaining the angle of 45°. Dry the smear in the air.

(b) Fix the smear by immersing it in absolutely pure methyl alcohol for three to five minutes. Then drain it off, and allow it to dry in the air; or wash with water and dry between sheets of filter paper.

(c) Stain for one-half minute in 0.5 per cent. alcoholic (70 per cent.) solution of Grübler's blood eosin or his "French pure" eosin. Wash in water.

(d) Without drying, stain for one to three minutes in Delafield's hæmatoxylin, made as follows:

Hæmatoxylin crystals	4 grams
Absolute alcohol	25 c.c.
Ammonium-alum crystals, C.P.	52 grams
Distilled water	400 c.c.
Glycerine, C.P.	100 c.c.
Methyl alcohol, C.P.	100 c.c.

"Rub up the hæmatoxylin crystals with the alcohol until they are dissolved and place the solution in a loosely corked glass bottle, allowing it to stand exposed to the light for four days. Dissolve the ammonium alum in the water, and allow it to stand exposed in the same way for four days. At the end of this time mix the two solutions, shake thoroughly, and filter at the end of three hours. Add the glycerine and methyl alcohol to the filtrate and allow this to stand over night. Filter the mixture, place it in a clear bottle, and allow it to ripen, exposed to the light, for six weeks, when it is ready for use."

(e) Wash with water, dry between sheets of filter paper, and mount in Canada balsam (R. W. Webster). This is the eosin-hæmatoxylin stain, ordinarily employed as a nuclear and basophile stain. The meningococcus is found mostly within the leucocytes.

The following test of Collignon and Pilod may be tried: To 50 drops of the centrifuged spinal fluid add 1 to 4 drops of antimeningococcus serum and incubate along with a control tube containing only spinal fluid, at 56° C. for twelve hours. The occurrence of precipitation is positive for meningococcus meningitis.

If the cerebrospinal fluid is cloudy, withdraw as much of it as possible, and inject at least 30 c.c. of Flexner's serum at once. The serum need not be repeated if no meningococci are found.

Other bacterial causes of acute meningitis are, pneumococci, bacillus tuberculosis, streptococci, staphylococci, bacillus influenzæ, and rarely the following: Friedlander's bacillus pneumoniæ, bacillus typhosus, bacillus coli, gonococcus, bacillus mallei, bacillus pestis. (See Meningitis, Acute Cerebrospinal).

In meningococcic meningitis it is probable infection enters through the nose and mouth.

Prognosis.—Some cases are mild and recover quickly; some are malignant and rapidly fatal. The use of Flexner's serum has reduced the mortality from about 50–80 per cent. to about 25–31.4 per cent. The duration of the disease is from one to six weeks or longer in cases not treated with serum. Convalescence is usually protracted. The following complications and sequelæ may occur: bronchopneumonia, pleuritis, parotitis, endocarditis and pericarditis, arthritis, inflammation of the eye structures, blindness, deafness due to otitis or nerve degeneration, deaf-mutism, hydrocephalus, mental deficiency, aphasia, paralyses, epilepsy.

Treatment.—Gentleness in handling the patient, and quiet should be observed, and the sick-room should be darkened. The bowels should be opened with calomel followed by a saline (see Part 11), and a daily movement should be thereafter secured. A concentrated liquid diet should be administered every two or three hours; water should be given freely (see the diet in Bronchopneumonia). Gavage (*q.v.*) is sometimes required. The hair should be clipped and an ice-cap kept to the head. A spinal ice-bag may also be used if not disagreeable. The skin should be daily cleansed with equal parts of alcohol and water, etc., to avoid bed-sores (*q.v.*). The nasal, buccal, and urinary discharges should be destroyed (see Disinfection). Use nose and throat spray of Dobell's solution (see Part 11) for patient and attendants.

Flexner's and Jobling's antimeningococcic serum should be administered at once, since delay in its use diminishes the chances of its efficacy. The serum should be kept in the refrigerator, and, before using, should be warmed together with the syringe with which it is injected, to the body temperature. Twenty to forty-five to even sixty c.c. (according to the clinical requirements; three to twenty c.c. for infants and children, but see Part 11) are injected very slowly, to avoid pressure symptoms, into the subarachnoid space, following a lumbar puncture and the withdrawal of as much cerebrospinal fluid as possible. The foot of the bed should be elevated, so that the serum may gravitate toward the brain. L. F. Barker directs that 20 to 40 c.c. of cerebrospinal fluid be withdrawn, according to the age and size of the patient, and 5 c.c. less of antimeningococcic serum than the amount of cerebrospinal fluid withdrawn be injected. The injection should be given every day (twice daily in very severe cases) for four days or longer, until the meningococci disappear from the cerebrospinal fluid and the symptoms disappear. If the cerebrospinal fluid is so purulent that it does not flow, irrigate the canal by means of a number of syringefuls of sterile normal saline solution, and then inject the serum. Dubois and Neal regard the syringe as dangerous, and use Koplik's gravity method instead. The pulse and respiration should be watched for signs of compression while introducing the serum. The serum may also be administered intravenously (see Intravenous Medication and Anaphylactic Shock): 60 to 100 c.c. daily during the first three or four days.

Lumbar puncture in itself is valuable as a therapeutic measure, for the relief of pressure symptoms and for drainage, and should be performed as often as necessary

under the following circumstances, viz., sudden onset with collapse, excessive headache and delirium; marked cervical opisthotonous indicative of posterior basic meningitis, where repeated puncture may possibly prevent hydrocephalus; sudden development of symptoms of hydrocephalus during convalescence, *i. e.*, slight rise of temperature, increased pulse rate, mydriasis, stupor, convulsions, and a hollow tympanitic percussion note over the site of the horn of the lateral ventricle (2.5 to 3 cm. lateralward from the junction between the sagittal and coronal sutures). The punctures should be repeated until the symptoms disappear. If, however, the ventricle is obstructed by adhesions in the passage between the third and fourth ventricles or about the fourth ventricle, one or more ventricular punctures will be necessary, and should be done early (see Cushing, in Keen's Surgery). In persistent obstruction a connection may be established between the posterior horn of the lateral ventricle and the subarachnoid space by means of strands of silk. Lumbar puncture in these cases is not without danger, for the medulla may crowd down into the foramen magnum and cause sudden death.

For the relief of pain and restlessness employ every two, three, or four hours, hot baths or hot packs, at a temperature of 100° to 110° F., for five to twenty-five minutes at a time, with an ice-cap to the head during the bath or pack. Morphine, trional, veronal, pyramidon, chloral, and bromide, may be used with discretion when deemed advisable. Ergot is said to prolong the action of a narcotic (see Part 11 for drug formulæ, etc.).

"The fever," says Koplik, "requires very little treatment."

Since hexamethylenamine (urotropin) is said to liberate formaldehyde in the spinal fluid, it may be tried; gr. lx a day (see Part 11).

Corrosive sublimate, gr. $\frac{1}{13}$ to $\frac{1}{8}$ hypodermically, every day, for adults, and unguentum Credé for children, are, no doubt, of some value as bactericidal agents.

For pain and stiffness during convalescence employ hot baths, warm packs, and gentle massage, once daily. Potassium iodide and sweating cures are recommended in chronic cases to hasten the absorption of exudate.

Cerebrospinal Meningitis.—See Meningitis, and Cerebrospinal Fever.

Cervical Enlargements.—L. *cer'vix*, neck. See Neck Enlargements.

Cervical Hypertrophic Pachymeningitis.—Gr. ὑπέρ over + τροφή nutrition; παχύς thick + μῆνιγξ membrane + -ιτις inflammation; inflammation of the dura mater. See Meningitis, Chronic.

Rib.—See Brachial Plexus.

Cervico-Brachial Neuralgia.—See Neuralgia.

Cervico-Occipital Neuralgia.—See Neuralgia.

Cestode Infection, Intestinal.—See Tapeworm Infection.

Chagas' Disease.—See American Trypanosomiasis.

Charcot's Joints.—See Arthropathies.

Cheese Poisoning.—See Poisoning.

Chicken Pox; Varicella.—A common, trivial, acute infectious, contagious and epidemic children's disease, characterized by an incubation period of fourteen to sixteen days, followed by some slight indisposition and the appearance of a discrete papulovesicular rash, which comes out slowly in successive crops, and is most marked upon the trunk. There is very little fever. The rash lasts about a week or longer.

Varicella differs from variola in that the pocks are single-chambered and can be emptied by a single needle-prick; they occur mostly upon the trunk, and often in the mouth; they are not hard and shotty to the feel; they may be seen at one time in all stages of development — papules, vesicles, crusts.

Treatment.—If isolation is decided upon, it should be continued until the skin is clear. The child should be restrained from scratching. For this purpose celluloid mittens may be worn. To relieve itching, sponge the skin with tepid boric acid solution, two heaping tablespoonfuls to the half gallon; or apply ten per cent. boric acid in cold cream; or menthol ointment, 5 to 10 per cent.; or a solution of menthol in equal parts of alcohol and water; or calamine lotion on lint.

℞ Calaminæ,
Zinci oxidi ..... aa ℥ii–iv
Acidi borici ..... ℥ii
Glycerini ..... ♏xxx
Acidi carbolici ..... gr. xv–lx
Aquæ calcis ..... ℥ii
Aquæ, q.s., ad ..... ℥viii
M. Sig.—Apply locally, on lint, for the relief of itching.

Some advise painting the lesions with equal parts of tincture of iodine and alcohol. Distended pustules may be opened and cleansed with boric acid solution or tincture of iodine.

Child-Crowing.—See Laryngismus Stridulus.

Chills. — **Causes.** — Nervousness; severe pain; parturition (nervous chill); infusion of saline solution; urethral catheterization; movable kidney; cholelithiasis; paroxysmal hæmoglobinuria; gastric cancer; acute congestion of the lungs; pneumonia, tuberculosis; malaria; pyogenic sepsis; typhoid fever; typhus fever; acute nephritis; rheumatic fever; relapsing fever; acute diffuse myelitis; acute febrile polyneuritis, and other infectious diseases at the onset.

Chloroma. — Gr. *χλωρός* green + *-ωμα* tumor.—Chloroma is a name given to a rare, fatal affection, characterized by the occurrence of "greenish, subperiosteal, lymphoid masses and the blood picture of lymphatic leukemia." (A. E. Stansfeld.) See Leukæmia.

Chlorosis.—Gr. *χλωρός* green; green-sickness.—An anæmia of unknown cause, occurring almost exclusively in young girls, usually between fourteen and twenty-five years of age, characterized by a slight diminution in the number of red corpuscles, ordinarily a diminution in their size, and a marked reduction in the coloring matter per corpuscle (achromia or pallor of the centres of the cells is noticeable), with consequently a low color index. See Blood Examination.

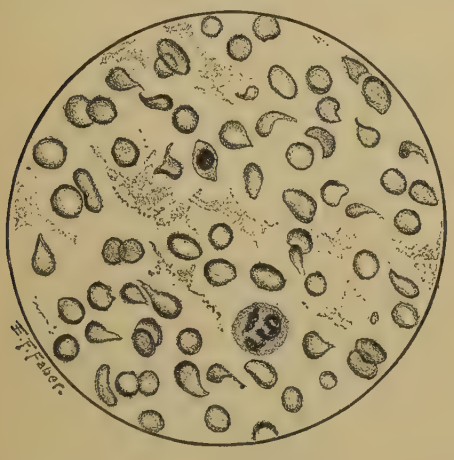


Fig. 32.—Blood of chlorosis.

The skin has a wax-like appearance, changing to a greenish tone; the corneæ are, in typical cases, sky-blue. Secondary symptoms are breathlessness on exertion, palpitations, syncope, functional systolic murmurs, slight œdema, muscular weakness and lassitude, perverted appetite (for pickles, chalk, etc.), dyspepsia, constipation, amenorrhœa, etc. Thrombosis (*q.v.*) sometimes occurs. Exclude early pulmonary tuberculosis and gastric or duodenal ulcer.

Etiological factors of importance are bad hygiene, care and worry, mental or physical strain, masturbation, insufficient food, lack of fresh air and exercise.

Prognosis.—Under treament recovery usually occurs in from three to six months. Recurrences, however, are common.

Treatment.—Enjoin mental and physical rest, sufficient sleep, fresh air day and night, sunshine, nutritious digestible food, and frequent warm bathing followed by a sprinkling of cool water and friction with a coarse towel. Carbon dioxide baths (*q.v.* in Part 11), taken thrice weekly, are very stimulating. General massage is useful. Prescribe iron.

℞ Pil. ferri carbonatis (Blaudii) ..... gr. v
Recent. præparat. pulv. in caps. no. 100.

Sig.—One pill t.i.d.p.c., increased by one pill each week until three or four or five pills are taken t.i.d. (To prevent gastric solution and irritation the powder may be dispensed in gelatine capsules hardened with formalin: Sahli's glutoid capsules, grade II of hardness.) Continue the iron for six months after recovery, in order to prevent relapse, and withdraw it gradually.

Kerley prefers the following:

℞ Tincturæ nucis vomicæ ..... gtt. cxx (gtt. iv per dose)
Extracti cascaræ sagradæ ..... gr. x (gr. ⅓ per dose)
Extracti ferri pomati. gr. xv (gr. ½ per dose)
Liquoris potassii arsenitis ..... gtt. cxx (gtt. iv per dose)
Quininæ bisulphatis.. ℥i (gr. ii per dose)
M.—Div. et fiant capsulæ no. 30.

Sig.—One after each meal. Take for periods of ten days, with five days intermission. (Kerley).

Yeo prefers the following two formulæ:

℞ Ferri sulphatis exsiccati ..... gr. lxxii (gr. iii per dose)
Potassii carbonatis... gr. xii (gr. ss per dose)
Pulveris nucis vomicæ ..... gr. xxiv (gr. i per dose)
Saponis ..... gr. vi
Misce et div. in pil. 24.

Sig.—One to three pills after each meal. (Yeo.)

℞ Ferri sulphatis..... gr. xvi (gr. ii per dose)
Acidi sulphurici diluti ♏xl (♏v per dose)
Liquoris strychninæ, 1 per cent..... ♏xlviii (♏vi per dose)
Magnesii sulphatis... ℥i (℥i per dose)
Aquam chloroformi, ad ℥viii
M. Sig.—Two tablespoonfuls twice or thrice a day, an hour before meals. (Yeo.)

Forchheimer gave gr. v–x of beta-naphthol, salol, or benzosalin, t.i.d.a.c., as an intestinal antiseptic, and Blaud's pills after meals. To children he gave chocolate or saccharin flavored tablets of hæmogallol,

or ferratin (see Part 11 for drug formulæ, etc; for other preparations of iron, see Anæmia.)

For constipation, a saline may be given each morning, one hour before breakfast; or cascara sagrada; or compound laxative pill; or aloes; or aloes, gr. ii–iv, with ext. nuc. vom., gr. ¼; or ext. cas. sag., gr. ii, with ext. nuc. vom., gr. ¼; may be given once or twice daily or at night, to ensure a daily bowel movement. The officinal pilula aloes et ferri may be of service.

For anorexia prescribe bitter tonics before meals (see Anorexia).

For hyperchlorhydria, see Hyperacidity.

For hypochlorhydria, prescribe dilute hydrochloric acid, 10 to 20 drops, well diluted, one-half hour after meals, sucked through a tube, and nux vomica before meals.

In severe cases, keep the patient in bed for several weeks, and give, besides iron, Fowler's solution, gtt. ii, well diluted, p.c., very gradually increased even up to 15 or 20 drops t.i.d. The iron may be given hypodermically.

℞ Ferri et ammonii citratis, solut. aq. neutral. steril., 10 per cent. 1.0 c.c.
Dispense in sterile ampoules.
Sig.—Inject 1 c.c. (gr. iss per dose) daily or every other day deep into the skin of the back or thigh, using a platinum hypodermic needle. (Forchheimer).

For the treatment of thrombosis, see under Thrombosis.

Chlorosis may be accompanied by, or possibly caused by, hypothyroidism (*q.v.*).

Cholangitis, Acute and Chronic Catarrhal.—Gr. χολή bile + ἀγγεῖον vessel + -ιτις inflammation. See Jaundice, Catarrhal.

Cholangitis, Suppurative.—Suppurative inflammation of the bile ducts.

Symptomatology.—Repeated chills and sweats, leucocytosis, and a septic fever, a variable degree of jaundice, enlargement and tenderness of the liver, usually cholecystitis, nausea and vomiting, and progressive emaciation and weakness. The prognosis is bad.

Etiology.—Gall stones; chronic catarrhal cholangitis (catarrhal jaundice); a tumor obstructing the bile ducts; infectious discases; suppurative pylephlebitis; rarely the following: liver abscess; compression of or rupture into the biliary ducts of a hydatid cyst; compression of the ducts by an aneurysm of the hepatic artery; the presence in the ducts of round worms, or liver flukes, or of a foreign body, such as a fish bone.

Treatment.—Establish free and prolonged drainage by means of a cholecystostomy.

Cholecystitis.—Gr. χολή bile + κύστις bladder + -ιτις inflammation.

A. Acute Cholecystitis.—Acute cholecystitis may be catarrhal, suppurative, or gangrenous. Typical symptoms are nausea, vomiting, elevation of temperature, rapid pulse and local pain, tenderness, enlargement, and muscle spasm. Local signs, however, may be absent. If jaundice occurs, it may be due to cholangitis, spasm of the bile ducts, or gall stones. Sometimes the symptoms are those of acute intestinal obstruction; sometimes appendicitis is diagnosed.

The condition is serious. While the inflammation usually subsides in from ten to fourteen days, chronic cystitis and gall stones are apt to follow. Perforation is a danger.

Etiology.—Gall stones; traumatism; infectious diseases: typhoid fever, pneumonia, bronchitis; tonsillitis; local intestinal disease; Bright's disease; obstruction of the drainage ducts due to tumors, round or fluke worms, a foreign body, such as a fish bone, gall stones, kinking or cicatricial constriction of the ducts.

Bacterial agents are the bacillus coli, streptococci, staphylococci, bacillus influenzæ, bacillus typhosus, pneumococci, bacillus mucosus.

Treatment.—Because of the vomiting, withdraw all food for a day or two, or allow small amounts of broth, raw egg albumen, and equal parts of milk and Vichy or Apollinaris or lime water. For persistent vomiting, try gastric lavage with hot soda water or the remedies enumerated under Vomiting.

Apply hot fomentations locally for the relief of pain and to promote the reaction of inflammation. Administer morphine hypodermically, say gr. 1/16, only if necessary.

Clean out the bowels with hot normal saline (℥i ad Oi) enemas for the first one or two days; or give calomel, followed by a saline, *e.g.*, sodium phosphate, or some other saline, together with hot enemas. The free drinking of alkaline mineral waters is advised.

Urotropin and the salicylates are recommended as biliary antiseptics. (see Part 11 for Drugs).

Operate if the symptoms grow worse instead of subsiding. Do a cholecystectomy, if feasible, but if there is the slightest evidence of involvement of the hepatic ducts, do a cholecystostomy and drain the ducts for a week or two. Cholecystostomy is also indicated in the presence of pancreatitis, pregnancy, old age, and stenosis of the common duct. The Mayos advise that the gall bladder be sutured "to the aponeurosis external to the muscle, just beneath the skin," so that, in case of relapse, " spon-

taneous reëstablishment of the fistula" can occur.

B. Chronic Cholecystitis.—Gall stones are usually present; indeed, the symptoms, prognosis and treatment are the same as for cholelithiasis (*q.v.*). Jaundice and colicky pains, however, may occur as a result of spasm of the ducts, or cholangitis, or constricting peritoneal adhesions, and not necessarily as a result of gall stones.

The Treatment is cholecystectomy, or, if the hepatic ducts are infected, cholecystostomy and drainage.

In operating for chronic non-calculous cholecystitis, the Mayos advise, for diagnostic reasons, that the appendix, right kidney, pylorus of the stomach, and the duodenum be explored before opening the gall bladder.

Cholelithiasis; Gall Stones.—Gr. χολή bile + λίθος a stone. Chronic indigestion—usually pylorospasm, hyperchlorhydria, and intestinal flatulence—may be the only symptom. There is usually, however, a history of gall-stone colic. An attack of colic may last from several hours to a week or longer, and is characterized by severe paroxysmal pain in the epigastric or right hypochondriac region, radiating to the right scapular region, associated with elevation of temperature, sometimes chilliness, nausea, vomiting, and usually the local signs of acute cholecystitis (*q.v.*). Search the stools for gall-stones by means of a fine sieve. Before diagnosing biliary colic, exclude renal colic, Dietl's crisis, gastric or duodenal ulcer, hyperchlorhydria, lead colic, and gastric tabetic crisis.

Jaundice is a common symptom of cholelithiasis, and may be due to stone in the common duct or in the hepatic ducts, to compression of the ducts by a stone in the cystic duct, to spasm of the ducts, to inflammatory swelling of the ducts, or to constricting peritoneal adhesions (for all possible causes of jaundice, see Jaundice.) Stone in the common bile duct may cause complete obstruction and persistent jaundice, or incomplete obstruction ("ball valve stone"), with a jaundice of varying intensity, associated with intermittent chills, fever, and sweats, pain in the right hypochondriac and epigastric regions, nausea etc., due to biliary infection (cholangitis).

Stone in the cystic duct may cause complete obstruction, distention of the gall-bladder with mucus, and acute cholecystitis; or it may cause incomplete obstruction, with contraction and fibrosis of the gall-bladder, and a resulting chronic dyspepsia.

The occurrence of peritoneal adhesions may, in themselves, give rise to symptoms of indigestion and even jaundice. Biliary fistulæ—cutaneous, gastro-intestinal, bronchial, rarely others—may occur. Perforation into the peritoneum and intestinal obstruction are other possible consequences of gall-stones. "Involvement of the pancreas in gall-stone disease is exceedingly common." (Mayo.)

Etiology.—In Naunyn's belief, a mild catarrh of the bile passages is the starting point of gall-stone formation, but Boysen and Rovsing hold that gall-stones are the result of transient thickening or inspissation of the bile, during which precipitation is liable to occur.

Contributory causes are: a sedentary life, constipation, insufficient fluid ingestion, overeating, alcohol, obesity, pregnancy, tight-lacing, enteroptosis, nephroptosis, depressing mental emotions, and an habitual "leaning forward" posture, all causing concentration of the bile or obstruction to its free flow. Typhoid fever is often followed by cholelithiasis. The colon bacillus, typhoid bacillus, streptococcus, staphylococcus, pneumococcus, and influenza bacillus may act as causal agents. The great majority of stones have their origin in the gall-bladder and not in the liver itself.

Treatment.—(a) Gall-stone colic. Administer a hypodermic of morphine, gr. ¼, with atropine, gr. $\frac{1}{100}$, both to relieve pain and relax spasm, and repeat the dose if necessary. A few whiffs of chloroform or ether may be given while waiting for the morphine and atropine to act. Atropine, gr. $\frac{1}{150}$–$\frac{1}{50}$, or tincture of belladonna, ♏xv–xxx, may be given alone for the purpose of relaxing muscular spasm of the ducts; ♏x of the tincture may be given every four hours until the throat becomes dry and a red flush appears on the face and neck. Tincture of hyoscyamus, ♏xv–xxx; spirits of chloroform, ℥i, well diluted; and spirits of ether, 30 drops in two drams of chloroform water every fifteen minutes; are also severally recommended. Hot local fomentations, hot antiphlogistine or cataplasma kaolini, mustard packs, hot lavage of the stomach, hot foot-baths, and the hot full bath lasting an hour or so, are all useful for the purpose of relaxing spasm of the bile ducts. Osler, Croftan, and others advise the administration of laxatives; Yeo does not. The patient should drink large quantities of hot water containing sodium bicarbonate, ℥i to the pint; to which sodium salicylate, gr. x–xx every four hours, may

also be added, for the purpose of diluting the bile (Yeo; Langdon Brown). If collapse threatens, give hot alcoholic drinks, champagne, aromatic spirits of ammonia, ℥i well diluted; or sterile camphorated oil, ℥ss, or ether, ♏x–℥i, hypodermically, deep into the muscle, every one or two hours, as required. For the relief of persistent vomiting, employ gastric lavage, or the remedies enumerated under Vomiting. Give no food as long as the vomiting persists.

(b) After the attack has subsided, enjoin the following prophylactic rules, viz., a plain, moderate, bland diet; the drinking of large amounts of alkaline mineral waters, such as Vichy or Apollinaris, or soda water—sodium bicarbonate, gr. xx to the tumblerful, preferably hot; laxatives—Carlsbad water, or sodium sulphate or phosphate, ℥i, in a glass of hot water, once to thrice daily, as required, one hour before meals; daily exercise in the open air; and deep, diaphragmatic breathing. These measures are designed to promote the flow of bile and to prevent its concentration.

Sodium glycocholate, gr. x–xv daily, ammonium chloride, gr. x t.i.d., and sodium salicylate, gr. x–xv, well diluted, t.i.d., are the most effectual cholagogues. The latter is also a biliary antiseptic. Hexamethylenamine or urotropine, and helmitol (see Part 11) liberate formaldehyde in the bile passages, and may therefore be used as biliary antiseptics, if deemed advisable. The use of olive oil is of doubtful value.

For the relief of itching, employ hot alkaline baths, or a dusting powder consisting of starch, ℥i, camphor, ℥iss, and zinc oxide, ℥ss, or some one of the remedies given under Pruritus, in Skin Diseases, Part 5. W. Langdon Brown says he has found thyroid extract, gr. v, two or three times a day, the best remedy, "as it diminishes the production of bile salts to the presence of which in the circulation the itching is due."

(c) Operation is indicated in:

1. Acute cholecystitis which increases in spite of conservative treatment.
2. Persistent enlargement of the gall bladder.
3. Two or more attacks of gall-stone colic.
4. Chronic jaundice (operate early).
5. Intestinal obstruction, due to gall stones or to fistulæ.
6. Peritonitis.
7. Chronic pain and dyspnœa due to peritoneal adhesions.

For stones in the gall-bladder or cystic duct, perform a cholecystectomy, unless there is evidence of infection of the hepatic ducts, when a cholecystostomy should be performed, the stones removed, and drainage established. For stones in the common duct, perform a choledochotomy followed by temporary drainage to the surface.

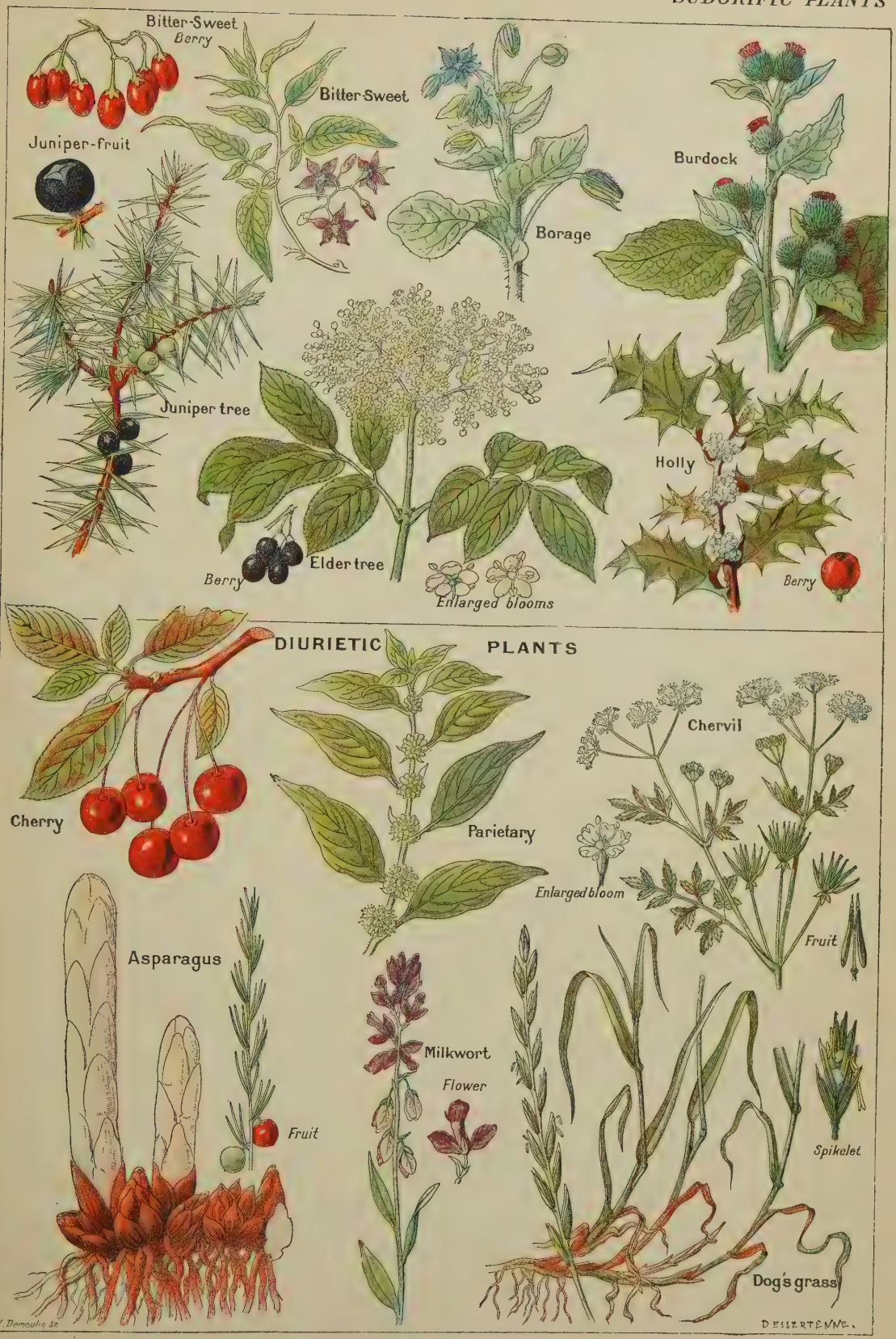
In the presence of jaundice, give calcium lactate, gr. xv, t.i.d., for three days before operation, in order to diminish the tendency to hemorrhage.

Cholera Asiatica.—Gr. χολέρα, from χολή bile. A very fatal, epidemic, acute intestinal infection, caused by the ingestion of the cholera vibrio or spirillum, or coma bacillus of Koch, and characterized by an incubation period of about two to six days, followed by a profuse diarrhœa (rice-water stools), nausea, vomiting, flatulency, colic, coated tongue, thirst, muscular cramps, and often collapse. The cases vary in severity from mild ones which recover in a few days, to very severe cases with delirium, coma, shrunken facies, circulatory failure, anuria, and rapid death.

The diagnosis is made by the demonstration of the cholera vibrios in the dejecta, and by the agglutination test. The latter is performed as follows: Place in a small test tube fifteen drops of an actively motile twelve to twenty-four hour bouillon culture of cholera vibrios, and add to this one equally sized drop of the patient's blood. Examine the mixture under a cover glass with a high-power dry lens. The occurrence of clumping within five to twenty minutes indicates a positive reaction.

H. K. Mulford Co., Philadelphia, furnish a cholera agglutinating serum which consists of the dried blood-serum of horses which have been injected with killed cultures of the cholera vibrio. "For use the serum is dissolved in salt solution so as to make a definite dilution, commonly 1:100. A drop of this is mixed with the suspected culture and the mixture is observed under the microscope for evidences of agglutination." (N. N. R.)

Treatment.—Put the patient to bed, cover warmly, and administer frequently and abundantly a mixture of equal parts of kaolin or bolus alba and water (Stumpf). Charcoal may also be added to this mixture in any amount. Both the kaolin and charcoal probably act by absorbing the toxins and mechanically carrying the bacteria away with them. Leonard Rogers extols the virtues of permanganates, which, he declares, "have the power of rapidly oxidizing cholera toxins into harmless bodies." He gives in severe cases two keratin or salol coated pills, each containing two grains of potassium per-



LAROUSSE MÉDICAL

Sudorific and diuretic plants.

manganate, every fifteen minutes for two to four hours, and then every half-hour, "until the stools become less copious and of a greenish or yellow color." "In milder cases and in children smaller quantities are given." "In addition, a solution of calcium permanganate, gr. ii–vi to the pint, is given to drink in large quantities." "Commonly, in about six to eight hours, the stools change color, when the permanganates are omitted, but a further course of sixteen grains is given twenty-four hours after admission to guard against relapses, or whenever rice-water stools are again passed."

Formerly it was the custom to administer calomel, gr. ½ to ¾, every two hours for one or two days (gr. ix–xv altogether for an adult); followed by Bismuth subnitrate in large doses, *e.g.*, ℥ss–i, every two or three hours:

℞ Bismuthi subnitratis,
Bismuthi salicylatis..... aa gr. xxx
Mucilaginis acaciæ..... ℥ii
Aquam chloroformi, ad..... ℥i

M. Sig.—To be taken, after shaking, every two or three hours. (Yeo.)

The bismuth is supposed to form a protective antiseptic coating to the intestinal wall, and it gives off slowly, in contact with water, nitric acid (the cholera vibrios do not grow in an acid medium). Rogers does not sanction the administration of astringents or of opium.

For the first three days it is well to give no food by mouth, excepting only hot barley water or hot weak tea in small amounts frequently. On about the fourth day, if feasible, try the addition of whey and arrowroot, and later boiled milk diluted with Apollinaris or Seltzer water, broths, cocoa, and raw eggs. Water should be given freely.

To help control the vomiting, one may wash out the stomach with a warm solution of sodium bicarbonate, ℥i ad Oi, or give cracked ice to suck, or tincture of iodine one drop in a teaspoonful of water, every fifteen minutes for three or four hours, and at the same time apply a mustard plaster (*q. v.* in Part 11) to the epigastrium.

Apply hot flaxseed poultices or hot turpentine stupes to the abdomen, the latter as follows: Wring out a flannel from steaming hot water containing a teaspoonful of turpentine to the quart, apply it to the abdomen, and cover with dry flannel; alternate these with plain hot stupes.

If the fever exceeds 104° F., employ ice to the head, cold packs or cold sponging, and cold water enemata, at once, for, says Rogers, "if the patient once becomes unconscious from hyperpyrexia, I have never seen recovery take place, although a temperature of 106° is harmless if detected and reduced without delay."

For collapse, employ warmth and stimulation: camphorated oil, strychnine, caffeine, strophanthin, digitalin, pituitrin, epinephrine (see Part 11).

The subcutaneous, intravenous, or colonic infusion of normal (gr. lxx ad Oi) or better, gum-salt solution, should be employed from the beginning to replace water loss and maintain the circulatory and renal functions. Leonard Rogers' hypertonic solution consists of sodium chloride, gr. cxx, potassium chloride, gr. vi, and calcium chloride, gr. iv, to the pint of water. It is best given intravenously (*q.v.*); 3 to 4 pints, slowly, to adults; 1½ pints to children of ten years; less for younger children. From twenty to even thirty-four pints may be injected in the course of three or four days; but only in the presence of lowered arterial tension. If the fever is high, the temperature of the infusion should be correspondingly lowered.

Soloids containing the above salts may be obtained from Burroughs, Wellcome & Company; 4 to one pint makes a hypertonic solution, 3 to one pint an isotonic solution.

Treat suppression of the urine by early and repeated infusions of alkalies, as described under Acidosis.

The bland liquid diet should be continued for some time during convalescence in order to guard against relapse.

Prophylaxis.—Isolate the sick, cholera carriers and all contacts (the latter for six days), and carry out the sanitary measures described under Disinfection. The excreta and soiled objects should be disinfected; cresol water, 2½ per cent., milk of lime, 1:5, and chloride of lime, 1:50, are efficient disinfectants. Clean out dirty dwellings. Boil the drinking and washing water and cook all food; and exclude flies. Keep the hands clean. Preventive vaccination with living or dead vibrios is successfully carried out (see Vaccines in Part 11).

Convalescent patients should be released from quarantine only when examination of the stools for vibrios is negative on three alternate days.

Cholera Infantum.—See under Diarrhœa in Bottle-fed Infants and in Early Childhood.

Morbus or Nostras.—See under Enteritis Acuta.

Chondrodystrophia Fœtalis.—See Achondroplasia.

Chorea, Acute.—Gr. χορεία dance. Syn. Sydenham's Chorea; St. Vitus Dance. A common affection, mostly of children and adolescents, characterized by the occurrence of irregular, jerky, bizarre, involuntary clonic contractions of various groups of muscles (the fidgets), associated with an irritable and emotional disposition, mental dulness, muscular weakness or paresis, and sometimes mutism. Endocarditis often occurs. There are mild and severe cases, and rare malignant or maniacal cases (chorea insaniens, which usually ends fatally). The disease usually terminates in recovery in from about six to twelve weeks, more or less; but it may recur. It rarely becomes chronic.

In doubtful cases exclude multiple sclerosis, Friedreich's ataxia, hysteria, chronic poliomyelitis or spinal paraplegia, etc. (see Tremor.)

Etiology.—The disease is possibly related to rheumatic fever. Anæmia and poor nutrition predispose. Worry, anxiety, grief, fright, shock, and mental strain in school are causal factors. Pregnancy is a factor in cases occurring in adults.

Treatment.—Enjoin mental and physical tranquility. Keep the patient in bed during the acute stage, surround the bed with a screen, and exclude visitors and other children of the family. Prescribe an abundant, simple, nourishing diet—milk, milk foods, eggs, vegetables, cereals—and prohibit tea, coffee, and alcohol. Bitter tonics may be given to aid digestion (see Anorexia). Attend to the bowels. Warm or cold wet packs, a daily hot bath lasting ten to fifteen minutes, followed by a cool douche, and gentle massage of the entire body for fifteen to twenty minutes daily, are useful sedative and rejuvenating measures. After being allowed up, the child should rest recumbent for two hours after the noon meal.

Arsenic is universally praised. Give Fowler's solution, two drops, well diluted, t.i.d.p.c., to a child of six years, gradually increased by one drop every one, two, or three days, up to 10 or 15 or even 25 drops t.i.d. Should symptoms of poisoning occur, *e.g.*, puffiness below the eyes, abdominal pain, coated tongue, foul breath, vomiting and diarrhœa, stop the drug for three or four days, and then begin it again in the same or smaller doses.

Yeo praises the following, where arsenic seems ineffectual:

℞ Zinci valeratis vel bromo-valeratis gr. i–iii
Extracti hyoscyami..... gr. i–ii
Fiat pilula una; mitte talis 20.
Sig.—One pill t.i.d. (Yeo.)

Antipyrine, gr. xv–xx a day, in divided doses, to a child of eight years, with strychnine, gr. $\frac{1}{60}$, gradually increased to gr. $\frac{1}{30}$, t.i.d., is recommended as a substitute for arsenic by Holt and Forchheimer. Early symptoms of antipyrine poisoning are an exanthem, vertigo, faintness, and vomiting; of strychnine poisoning, muscular twitching.

Other drugs of service in procuring restfulness and sleep are: hyoscine hydrobromide, gr. $\frac{1}{200}$, several times daily; trional, gr. ii, every two to four hours, for a child of six to eight years (praised by Sachs); chloralamid, gr. x; monobromate of camphor, gr. i–iii; phenacetin (see Part 11); chloral and bromide, aa gr. v, up to gr. xv–xx, if necessary, three or four times a day, well diluted, in grave forms of the disease, for the purpose of keeping the patient asleep until the choreic movements have ceased for about twelve hours (Forchheimer); or apomorphine, gr. $\frac{1}{30}$, increased if necessary (see Part II for methods of administering the above drugs, etc.).

If rheumatic manifestations have preceded or attend the chorea, prescribe salicylates (see Rheumatic Fever). Kerley advocates antirheumatic treatment in all cases:

℞ Sodii salicylatis (Merck's or Squibb's)
Sodii bicarbonatis.. aa gr. lxxx (gr. v of each per dose)
Aquæ..... ℥iv
M. Sig.—Two drams, well diluted, t.i.d., for five days at a time with five days intermission (to avoid anorexia and indigestion); restrict sugar, and allow meat only every other day. (Kerley.)

Kinnier Wilson says that the most efficacious remedy ("practically a specific") is aspirin, gr. x–xv, four times or oftener in twenty-four hours, the dose to be reduced after a week if the case is progressing favorably.

℞ Acidi acetylsalicylici... ℥iiss (gr. xii per dose)
Syrupi aurantii..... ℥i
Aquæ chloroformi, q.s., ad..... ℥iv
M. Sig.—Shake well and give a dessertspoonful in water every 4 hours (for a child 6 to 8 years of age). *Handbook of Therapy of the A. M. A.*

Starr says, if periodical rises of temperature occur, suggesting malaria as a cause, give a calomel purge, followed by quinine "for at least a week." He adds: "This often cuts short an attack of chorea."

Prescribe iron for anæmia (see Anæmia).

In pregnancy cases the uterus may have to be emptied (see Obstetrics, Part 4).

Correct any nasal or ocular defects, otitis

media, carious teeth, diseased tonsils, adenoids, worms, phimosis, etc.

Chronic cases employ massage, passive movements, voluntary movements under control.

Chorea, Huntington's.—A chronic, progressive, often hereditary chorea, with irregular disorderly movements, appearing in adult life, of hopeless prognosis, tending to dementia and insanity, and due to a chronic diffuse cortical encephalitis, or, according to J. Ramsay Hunt, to degeneration of the small ganglion cells of the neostriatals system (candate nucleus), releasing the pallidal (or autmotic) motor mechanism from control with resulting choreiform movements. In well-developed cases the gait is irregular and swaying, and the speech slow, difficult and indistinct.

Chorea, Post-Hemiplegic.—See Athetosis.

Sydenham's.—See Chorea, Acute.

Chorea, Tetanoid; Progressive Lenticular Degeneration.—Gr. χορεία dance; τέτανος tetanus + εἶδος form. A rare, often familial disease, characterized anatomically by bilateral degeneration of the lenticular nucleus of the corpus striatum, and hepatic cirrhosis, and clinically by bilateral tremors, increased on voluntary motion, choreo-athetoid movements, spasticity, contractures, dysarthria, dysphagia, and emotionalism, without ankle clonus or the Babinski reflex (the pyramidal tracts are not affected), fever, emaciation, and a rapid course. The affection resembles paralysis agitans.

No effectual treatment is known.

Chyliform Ascites.—See Ascites.

Chylothorax.—Gr. χυλός chyle + θώραξ chest. The milky effusion may be chylous, due to distention or rupture of the lymphatics in obstructive lesions of the thoracic duct (tumors, inflammation, tuberculosis, aneurysm, exostoses, adhesions, trauma, whooping-cough, vomiting, muscular exertion, high venous pressure in tricuspid insufficiency, thrombosis of the left subclavian or innominate vein, filariasis, *q.v.*, etc.), or it may be chyliform, due to fatty degeneration of a tumor (the fat droplets are larger and less numerous than in chyle), carcinoma of the pleura, tuberculous and non-tuberculous pleuritis, pulmonary abscess (?), pus cells, epithelial cells, lipæmia (?), etc.

(Fat stains black with osmic acid, red with Sudan III, and is removed on shaking with ether, after alkalinizing with sodium hydrate.)

Treatment.—Enjoin quiet, and strap the chest from spine to sternum (as described under Pleurisy), in order to restrict its movements. Evacuate chylous fluid (see Ascites), only if the heart is much displaced, or pressure symptoms arise, viz., dyspnœa, cyanosis, and feeble heart action, and then remove only small amounts at a time. Cure has often followed repeated aspiration.

Small wounds of the thoracic duct may be expected to close spontaneously.

Chylous Ascites.—See Ascites.

Chyluria.—Gr. χυλός chyle + οὖρον urine. Chyluria is the result of rupture of a lymphatic varix in the kidney or bladder, due to lymphatic obstruction caused usually by the filaria sanguinis hominis Bancrofti (see Filariasis) and sometimes by unknown conditions. Rare causes are obstruction of the thoracic duct, due to aneurysm, exostoses, tumors, pregnancy, adhesions, trauma, thrombosis, etc., and chronic lymphangitis due to gonorrhea, syphilis, tuberculosis, bubonic plague, neighboring abscesses or ulcers, etc.

The chyluria is usually intermittent, and may be provoked by violent exercise, child-birth, eating, recumbency, etc. Retention of urine sometimes occurs as the result of clotting of the chylous urine in the bladder.

Treatment.—Enjoin absolute rest in bed with the hips elevated, and restriction of the diet, especially fats and fluids, until the rupture has healed, as ascertained by giving the patient a glass of milk. Administer saline aperients, and irrigate the bladder.

Should retention occur, inject repeatedly, through as large a catheter as possible, a warm sterile solution of sodium bicarbonate, in order to break up the coagulum.

Adult filaria may be removed from the enlarged lymph glands.

Circumflex Nerve.—L. *circumflex'us*, bent about. See under Brachial Plexus.

Cirrhosis, Alcoholic, of the Liver.—Gr. κιρρός orange-yellow; but cirrhosis has come to mean a chronic interstitial inflammation. See Cirrhosis, Portal, of the Liver.

Cirrhosis, Biliary, of the Liver.—Syn. Hypertrophic Biliary (Intralobular) Cirrhosis of Hanot. A rare disease, occurring mostly in the young, characterized by a persistent, smooth enlargement of the liver and spleen, associated with chronic jaundice, usually slight, and due to a radicular angiocolitis of unknown cause. Bile is present in the fæces. Periodic attacks of abdominal pain, with fever, leucocytosis, and increased jaundice, occur, lasting several days or weeks.

The disease is fatal in from four to ten years or longer.

For other causes of liver enlargement, see

Liver Enlargement. For other causes of jaundice, see Jaundice.

Treatment.—Enjoin moderate exercise in the fresh air, adequate protection against cold and damp, and a plain, bland, nourishing diet, excluding alcohol and all foods difficult of digestion. Keep the bowels regular by means of an occasional dose of calomel at night, and salts, such as sodium phosphate in the morning, one hour before breakfast. Prescribe, one hour before meals, a full glass of warm water containing about a quarter-teaspoonful of sodium bicarbonate, and the iodides after meals (see Part 11 for drug formulæ, etc.).

Sodium glycocholate, gr. x–xv daily, ammonium chloride, gr. x, t.i.d., and sodium salicylate, gr. x–xv, well diluted, t.i.d., are the most effectual cholagogues. The latter is also a biliary antiseptic. Hexamethylenamin or urotropin, and helmitol liberate formaldehyde in the bile passages, and may therefore be tried as biliary antiseptics.

Potassium or sodium hyposulphite is praised by Semmola. (Forchheimer.)

Cirrhosis, Gastric.—See Cirrhosis of the Stomach.

Cirrhosis, Portal, of the Liver.—Syn.—Alcoholic, Atrophic, Interlobular Cirrhosis; Hobnail or Granular Liver. A disease mostly of adults, characterized by a tender, enlarged liver, the enlargement being often intermittent (see Liver Congestion, Active), and later followed, perhaps, by a reduction in size, associated with gastro-intestinal catarrh and portal obstruction, with, perhaps, ascites, hæmatemesis, melena, hemorrhoids, distention of the superior abdominal veins, enlargement of the spleen, and sometimes slight jaundice. Toxic symptoms—delirium, stupor, coma, convulsions, may appear.

For other causes of liver enlargement, see Liver Enlargement. For other causes of ascites, see Ascites.

The Prognosis is bad, unless early treatment is instituted. Death often occurs within three years of the onset of ascites. Tuberculosis of the lungs and peritoneum often supervenes. Nephritis is common.

Etiology.—Chronic alcoholism is the chief cause. Other causes are the habitual use of spices, poisons elaborated in chronic gastro-intestinal catarrh, infections, the fluke-worm (see Distomiasis),, etc.

Treatment.—On the first appearance of symptoms of the disease, it is advised that the patient be placed upon an almost exclusive milk diet for from four to six weeks: two to three quarts of milk daily, diluted with an equal quantity of thin oatmeal gruel, Vichy, or Apollinaris water, or, instead of the alkaline mineral waters, one may add sodium bicarbonate, gr. x–xv, to each glassful of warm milk and water; buttermilk, chocolate, or cocoa may also be allowed; the milk may be peptonized (see Part 11). At the expiration of the four or six weeks, add to the diet eggs, raw or boiled three minutes, custards, well-cooked cereal gruels, vermicelli, macaroni cooked with milk, green vegetables, stewed fruits, and fish; lots of water should be drunk; salt should be restricted. After a month or longer return to the milk diet for several weeks, and so on indefinitely (A. O. J. Kelly). Alcohol, including medicines containing alcohol, spices and condiments, meat soups, extracts and broths, fatty and saccharine foods, and foods that are prone to ferment in the intestinal tract, such as beans, should, of course, be interdicted.

The bowels should be kept active by means of an occasional dose of calomel, gr. ii–vii at night, and sodium phosphate or sulphate, ℥ss–ii–iv, in hot water, one hour before breakfast; and it is well to prescribe, for the gastric catarrh, a glassful of hot water containing about fifteen grains of sodium bicarbonate one hour before each meal. Ammonium chloride is recommended for the gastric catarrh, also the following:

℞ Acidi nitro-hydrochlorici diluti..... ℥ss (♏x per dose)
Strychninæ nitratis.. gr. ss (gr. 1/18 per dose)
Infusi chiratæ, *q.s.*, ad ℥xii

M. Sig.—Tablespoonful in a wineglassful of water before meals.

℞ Sodii bicarbonatis... ℥iss (gr. xxii per dose)
Bismuthi subcarbonatis..... gr. lxxx (gr. xx per dose)
Mucilaginis acaciæ... ℥ss
Aquæ menthæ piperitæ, *q.s.*, ad..... ℥vi

M. Sig.—Three tablespoonfuls (after shaking) as required, for pyrosis and morning vomiting.

For the relief of flatulent distention employ the remedies given under Tympanites.

For local pain employ hot or cold compresses, abdominal massage, purgatives and ammonium chloride.

The iodides (see Part 11) are well recommended for the cirrhotic condition. A history of syphilis or a positive Wassermann reaction calls for specific treatment.

For hæmatemesis or melæna employ absolute rest in bed, with an ice-bag suspended from a bed-cradle over the epigastrium, and morphine hypodermically if necessary to allay restlessness. Allow no

food or drink by mouth until several days after the hemorrhage has ceased, then institute a gastric ulcer regimen (*q.v.*). For continuous bleeding one may try adrenalin chloride, 1:1000, thirty drops in a teaspoonful of water every hour for two or three doses; or gallic acid, or turpentine, highly praised; or aromatic sulphuric acid, and free purgation with sodium phosphate mixed with dilute sulphuric acid (see also Hæmatemesis).

For toxic manifestations (noisy delirium, stupor, coma, convulsions) purge the patient with calomel, gr. v–viii, and compound jalap powder, ʒss–i, make hot applications to the liver, encourage copious water drinking and administer alkalies as described under Acidosis.

For ascites, early and repeated tapping should be resorted to, for it has sometimes resulted in cure. The use of purgatives and diuretics (calomel, elaterium, compound jalap powder, Rochelle salt) is usually of little avail, but saline cathartics and diuretics are useful after tapping.

℞ Pulveris digitalis,
Pulveris scillæ..... aa gr. i
Hydrargyri chloridi mitis..... gr. ¼
Fiat pilula una; mitte talis 12.
Sig.—One pill twice daily. (Addison's Pill.)

℞ Potassii acetatis,
Spiritus ætheris nitrosi,
Spiritus juniperi.... aa ʒi (ʒss per dose)
Infusi digitalis..... ʒviii (ʒss per dose)
Aquæ, q.s., ad..... oi
M. Sig.—Two tablespoonfuls t.i.d. (Yeo.)

℞ Olei copaibæ..... ♏xv
Fiat capsula una; mitte talis 15.
Sig.—One capsule 2 or 3 times a day, after meals.

℞ Tincturæ apocyni cannabini (Lloyd's) ʒii
Sig.—Two or three minims every three or four hours. (Said to be very effectual but not free from danger.)

Tapping is certainly demanded in the presence of pain due to distention, dyspnœa, moist râles over the bases of the lungs, hæmatemesis, oliguria, and beginning delirium tremens.

Before tapping, always have the patient urinate, or catheterize him. Place him on his back with the head and shoulders raised. Administer a diffusible stimulant of brandy or whiskey. Tap preferably in the midline between the umbilicus and pubes, or on a line between the umbilicus and the anterior superior spine of the ilium on the left side, (the deep epigastric artery, if wounded, should be ligated). Percuss to see that the site selected is dull. The skin may first be anæsthetized with the ethyl chloride spray, or an injection of a few drops of cocaine solution, about gr. $\frac{1}{10}$ to the dram. If deemed advantageous, a small incision may first be made through the skin, for the latter is sometimes quite tough. Use a small cannula and remove the fluid slowly. During the withdrawal of the fluid apply firm pressure with a flannel binder or a three- or four-tailed flannel bandage, in order to prevent syncope. After withdrawing the cannula, seal the puncture with cotton-wool saturated with collodion, and strap the abdomen tightly with adhesive plaster or a bandage, to prevent syncope.

An abdominal supporting binder may be worn for comfort.

One may consider the pros and cons of the operation which aims at the production of vascular adhesions between the liver and spleen and the parietal peritoneum, and between the omentum and the anterior abdominal wall, the adhesions being brought about by excoriating large opposing surfaces, and uniting them with catgut. About 37 per cent. have thus been cured, while about 33 per cent. have died as a result of the operation. But early operation should reduce this high mortality. Untreated cases present a bad prognosis, although early and repeated tapping has resulted in cures.

Cirrhosis, Pulmonary.—See Pulmonary Cirrhosis.

Cirrhosis of the Stomach.—A very rare, non-malignant or malignant, slowly progressive, diffuse or circumscribed sclerosis and thickening of the walls of the stomach, with reduction of its lumen, manifested by indigestion, a slowly increasing intolerance of much food at one time, pain, a slow cachexia, a transverse epigastric mass or tumor, the absence usually of hæmatemesis or melæna, sometimes ascites. It is rarely diagnosed during life.

Treatment.—Where the process is localized about the pylorus, do a pylorectomy; where it is diffuse, do a total resection. Gastroenterostomy is merely palliative.

Claudication, Intermittent.—L. *claudicátio*, limping or lameness. The occurrence of sudden painful muscular cramp, numbness, prickling and inability to proceed, after walking a certain distance, the pulse in the dorsalis pedis artery at the same time diminishing; all of which phenomena disappear on resting a while.

Etiology.—Sclerosis of the posterior tibial artery; aneurysm of the iliac artery; syphilis; alcohol; tobacco. There is said to be a spinal form of the disease. Gangrene (*q.v.*) sometimes occurs.

Treatment.—See arteriosclerosis. Employ potassium iodide in large doses over a prolonged period. Locally employ systematic massage, galvanization, and frequent hot bathing.

Clay-colored Stools; Acholic Stools; Fatty Stools.—Gr. α priv. + χολή bile. See Colorless Stools.

Cleft Palate.—See Harelip and Cleft Palate.

Coal Gas Poisoning.—See Asphyxia, and Poisoning.

Cocainism.—Cocaine addictees exhibit an exalted bouyancy of spirits, sometimes alternating with periods of depression, and eventually delusional insanity.

Treatment.—Withdraw the cocaine at once or gradually, as deemed advisable; and if necessary replace it for a time with valerian; the bromides, or hyoscyamus. (See Drugs, Part 11.) Give stimulants when required. For insomnia, employ prolonged warm baths. Prescribe full diet. The patient is best treated in a sanitarium.

Coccydynia or Coccygodynia.—Gr. κόκκυξ coccyx + ὀδύνη pain. An intractable neuralgia of the coccygeal nerves, aggravated by sitting.

Etiology.—Traumatism (external violence, horseback riding, childbirth, fracture, dislocation); caries of the bone; rheumatism; anal fissure; constipation; proctitis; utero-ovarian disease; rarely neurasthenia.

Treatment.—Remove the coccyx if the cause resides within the bone itself; otherwise correct any possible etiological factor.

The galvanic, or perhaps better, the faradic current, (see Med. Elect.) one pole to the sacrum or within the vagina and the other pole to the coccyx and surrounding tissues, may prove curative after a number of sittings. Massage may also be employed.

For the relief of pain one may employ the injection of sterile water over the seat of pain; or belladonna (gr. ss) or iodoform (gr. v–x) suppositories; or inunction with ung. veratri (U. S. P.) et lanolin, aa, avoiding the anus, as the ointment is irritating; or inunction with tr. aconiti, ℥ss, et. ung. belladonnæ, ℥i; or fly blisters one-half inch wide, over the posterior sacral foramina on each side (Ashton), Fig. 33.

Ashton highly recommends, as often curative, the deep burning, by means of the actual cautery, of a narrow strip from the base of the coccyx on each side upward along the course of the sacral foramina. See Fig. 33.

Yeomans has had success with injections of alcohol: "The patient, with rectum empty, assumes the left lateral (Sims') position on a firm table, with the thighs well flexed on the abdomen, and the region of the coccyx is painted with iodine. An all-glass Luer or similar sterile syringe of two c.c. capacity is filled with 80 per cent. alcohol and armed with a two-inch needle of fine gauge. The right index finger is then inserted into the rectum and the point of maximum tenderness is determined by counter-pressure with the thumb outside. With the finger still in the rectum to guard against puncture and to act as a guide, the needle is next introduced through the midline directly to the painful spot. When this is reached, the patient exclaims from pain

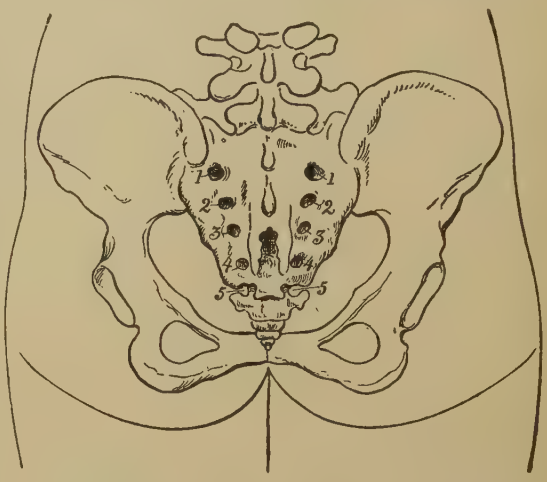


Fig. 33.—Shows the points of emergence of the five posterior sacral nerves. *Ashton's Gynecology*, W. B. Saunders Co.

that is exquisite but tolerable, and the injection of from 10 to 20 minims is made slowly. The needle is withdrawn and its puncture sealed with collodion after neutralizing the iodine on the skin with alcohol. The pain from the injected alcohol lasts a few minutes only and may be followed by a dull ache for a day or two. As a rule, three and at the most five injections should suffice. The interval between the injections should vary from five to ten days—one week on the average—and they are to be made always at the joint which is found most tender at the time of injection."—Quoted from the *Practical Medicine Series*, 1915, Vol. VIII.

If conservative measures fail, remove the coccyx. This is "almost always curative," says H. A. Kelly.

Cold; Catarrhal Fever.—See Nose Diseases, Part 8.

Colic, Biliary.—See Cholelithiasis.

Colic, Intestinal.—Paroxysmal attacks of intestinal pain, caused by spasmodic contractions of the gut.

Etiology.—A. In Adults.—The presence of undigested and irritating food; the drinking

of cold liquids; overeating; idiosyncrasy in regard to certain foods; constipation; foreign bodies, including round worms; exposure to cold; fatigue; emotion; certain laxative drugs, for instance, senna; lead (lead colic may be an angiospasm phenomenon: the blood-pressure is high); arsenic; angioneurotic œdema; enteritis and enterocolitis; intestinal ulceration; appendicitis; intestinal obstruction; mucous colitis; mesenteric cysts.

B. In Infants.—Cold feet; improper feeding of either the child or the mother; constipation in the child or mother; nervous disturbance in the child or mother; lack of exercise of the mother.

For other causes of abdominal pain, see Pain.

Treatment of simple intestinal colic.—A. In Adults.—If deemed advisable, morphine, gr. $\frac{1}{8}$ to $\frac{1}{6}$, with atropine, gr. $\frac{1}{120}$ to $\frac{1}{60}$, may be administered hypodermically, for the relief of spasm and pain. Give one or two tablespoonfuls of castor oil, or two to five grains of calomel, the latter to be followed later by a saline; and, while waiting for the purgative to act from above, give a large warm soapsuds enema, to which may be added, if deemed necessary, one or two tablespoonfuls of castor oil or sweet oil, with, perhaps, a tablespoonful of turpentine.

It is a common practice to give to children, by mouth, a mixture of castor oil and paregoric (see Part 11 for drugs).

Hot applications to the abdomen and massage along the course of the large bowel are useful adjuvant measures. (Massage and purgatives are contraindicated in spastic constipation.)

Useful carminative and antispasmodic preparations are the following:

Soda-mint tablets, one or two.

Oil of peppermint, ♏i–v, well diluted, in hot water.

Tincture of ginger, ℥ss–i, well diluted, in hot water.

Spirits of chloroform, ℥ss–i, well diluted, in hot water.

Hoffmann's anodyne, ℥ss–i, well diluted, in hot water.

Aromatic spirits of ammonia, ℥ss–i, well diluted, in hot water.

Compound tincture of cardamom, ℥ss–iss, well diluted, in hot water.

Valerian, peppermint, fennel, and caraway, one tablespoonful of a mixture of equal parts, steeped in a cupful of hot water.

℞ Tinct. belladonnæ fol., gtt. lxxx–℥iiss (gtt. v to ix per dose)
Spt. menthæ piperitæ, gtt. lxxx (gtt. v to vi per dose)
Tinct. valerianæ, ℥iv–v, (gtt. xv–xx per dose)
M. Sig.—Thirty drops in a cup of hot peppermint or fennel tea, t.i.d. (Cohnheim.)

℞ Tincturæ hyoscyami... ℥ss (a large dose)
Tincturæ belladonnæ... ♏vi
Sodii bicarbonatis..... gr. xx
Tincturæ zingiberis.... ♏xv
Spiritus chloroformi.... ♏xx
Aquam menthæ piperitæ, ad..... ℥i
M. Sig.—One ounce in water, t.i.d. (Mummery.)

℞ Spiritus ammoniæ aromatici,
Spiritus chloroformi,
Syrupi zingiberis,
Tincturæ lavandulæ compositæ.... aa ℥ss
M. Sig.—One or two teaspoonfuls in a cupful of hot water.

Enjoin rest and a light diet for several days after the bowels have been emptied. A flannel abdominal binder aids in the prevention of colic.

B. In Infants.—Clear out the intestinal tract by means of castor oil, ℥i–ii; or calomel, gr. i, in divided doses (gr. $\frac{1}{10}$ every half to one hour, until effectual, or until the stools turn green); or milk of magnesia, ½ to 1 teaspoonful; or aromatic cascara sagrada, 10 to 30 drops; or spt. ætheris comp., ℥ss, et tr. rhei, ℥iii,—7 drops in a teaspoonful of sweetened water, four times a day; and enemata of warm water and massage the abdomen along the course of the colon. Hot flannel or hot water bags may be applied to the abdomen, or hot turpentine stupes (turpentine, gtt. x to water, one quart), repeated every ten to fifteen minutes. The feet should be well warmed.

Hoffmann's anodyne, gtt. iii, in two teaspoonfuls of hot water, every ten minutes, or one soda-mint tablet in one ounce of hot water—one teaspoonful every five minutes, may be given as a carminative.

Attend to the diet, etc., as described under Infant Feeding. If the mother's milk is too strong, give ½ to 1½ ounces of plain water or barley water before each nursing.

Colic, Renal.—See Nephrolithiasis.

Colitis.—Gr. κολόν colon + -ιτις inflammation. See Enteritis.

Colitis, Mucous.—A chronic affection, characterized by the periodic passage of mucus in the form of shreds, membranes, and casts, which is sometimes, but rarely, preceded by severe abdominal pain. Sometimes the colon may be felt spastically contracted. Dyspepsia and usually constipation (spastic constipation: *q.v.*) are associated conditions.

While an ultimate cure may not be obtained, much relief is afforded by treatment. Cohnheim regards membranous enteritis and spastic constipation as remediable conditions, the result of a catarrhal

enteritis induced by a long continued atonic constipation.

Etiology.—The disease occurs mostly in women. Neurasthenia, hypochondriasis, melancholia, and hysteria are frequently associated with it. Possible causal influences are splanchnoptosis (including movable kidney, uterine displacement, etc.), chronic appendicitis, cholelithiasis, aneurysm of the aorta, tubo-ovarian disease, partial intestinal obstruction due to adhesions, strictures, diverticula, tumors, etc., long-standing constipation, the abuse of purgative drugs, especially mercury and podophyllin, intestinal catarrh, dysentery, infectious diseases. It may, however, be primary.

Treatment.—Correct any possible causal influence. Enjoin fresh air day and night, regular hours of eating and sleeping, and a morning warm bath (the bath being preceded by a cup of warm cocoa). Arsenic (see Part 11) may perhaps be prescribed as a tonic.

Some (Edwards; Roberts) prescribe, in the absence of indigestion or diarrhœa, a coarse, bulky and fatty diet, such as is recommended for atonic constipation; while others (Cohnheim; A. F. Hertz) consider a too coarse diet improper. The following dietary is perhaps admissible, viz., well-boiled green vegetables, passed through a sieve and served as purées, other vegetable purées, olive oil, butter, cream, bacon, stale bread, buttermilk, well-cooked cereals, bread pudding with fruit sauce, fresh or cooked juicy fruits, freed from skins and pips, jams, an orange for breakfast, fresh meats in moderation. The food should be thoroughly masticated. Avoid coffee, tea, condiments, salads, pickles, acids, alcohol, carbonated drinks, pork, goose liver, salt meats, salt fish, hard-boiled eggs, new bread, pastry, cakes, peas, beans, cabbage, cucumbers, celery, radishes, cheese, nuts. Water should be drunk freely. A glassful of hot water, containing, perhaps, about fifteen grains of sodium bicarbonate, may be taken one hour before each meal.

An occasional laxative should be employed when required. Hertz considers castor oil best in most cases; one or two tablespoonfuls may be given at night; White prescribes small doses several times daily, to keep the colon empty. Cascara sagrada, compound liquorice powder, colocynth, rhubarb, and aloes are mentioned as eligible laxatives. Liquid paraffin and agar-agar, may be used after the bowels have once been emptied of accumulated fæces. Forchheimer says, "Saline cathartics are the best." (See Part 11 for drug formulæ, etc.).

The following plan of treatment, "has done more for me," says Edwards, "than any other method that I have used for more than twenty years." Edwards irrigates the colon daily for about a week with warm normal saline solution (℥i ad Oi) containing a teaspoonful of sodium bicarbonate to the quart (avoid irritants, such as soap, glycerine, etc.). Thereafter, every night at bedtime he passes slowly into the colon, to be retained overnight, about 250 to 500 c.c., or 8 to 16 ounces, according to the amount retained, of warm olive or cottonseed oil, which has first been shaken with water in order to remove irritating fatty acids. This is continued for about six months, the injections being given at first daily for two or three weeks, then every other day for about a month, and then three times a week.

Hot sitz-baths for five to fifteen minutes about one hour before supper are recommended.

The daily administration of belladonna is recommended for aggravated spastic constipation.

For painful attacks of enterospasm, employ hot abdominal applications or hot sitz-baths, and administer codeine, heroin, or dionin, together with belladonna, either by mouth or in a suppository; or, if necessary, give a hypodermic of morphine and atropine. At the same time give cascara sagrada and warm alkaline saline enemata, followed, perhaps, by a high warm injection of one-half to one pint of bland olive or cottonseed oil, to be retained all night (no soap, glycerine, or other irritating enemata).

℞ Tincturæ hyoscyami..... ℥ss (a large dose)
Tincturæ belladonnæ..... ♏vi
Sodii bicarbonatis..... gr. xx
Tincturæ zingiberis..... ♏xv
Spiritus chloroformi..... ♏xx
Aquammenthæ piperitæ, ad ℥i

M. Sig.—One ounce t.i.d., for painful enterospasm. (Mummery, quoted by Edwards.)

Ionization with zinc sulphate, 4 per cent., is advocated (see Enteritis). Appendicostomy is sometimes performed for the purpose of irrigating the colon (every morning, after normal defecation) and keeping it at rest. Says Mummery: "Although it must be admitted that in many of the cases in which appendicostomy is performed, a complete cure does not result, yet very great improvement is the rule, and in many instances it is possible to close the opening at the end of a few months." It is perhaps best to maintain the artificial opening for at least a year.

Moynihan advocates partial or complete resection of the colon in intractable cases, especially the last part of the ilium, the cæcum, and the ascending colon.

Collapse.—See Shock.

Colon, Dilatation of the.—Idiopathic dilatation of the colon (congenital or acquired) is characterized by the association of obstinate constipation with increasing abdominal distention and attacks of pain, temporarily relieved by the evacuation of a large amount of fæces. The diagnosis may be aided by giving an enema of bismuth sulphate and oil in the knee-chest posture, and then taking an X-ray picture.

Treatment.—To keep the colon from becoming overfilled, employ olive oil, and liquid paraffin (see Part 11) by mouth, together with copious high enemata. Faradization and massage may be practiced, but not massage if there is pain indicating the presence of ulcer.

In the presence of acute obstruction do not perform colostomy, unless done above the affected bowel, for the heavy gut is apt to tear away, with resulting peritonitis.

Resection of the enlarged colon, or anastomosis of the ilium with the lower sigmoid or upper part of the rectum, is said to be curative, although a recurrence has even followed resection. Mummery suggests appendicostomy or cæcostomy and daily irrigation of the colon through the appendix in cases in which the formidable operation of resection does not seem feasible or desirable.

Colon, Inflammation of the.—See Enteritis.

Spasm.—See Enterospasm.

Ulceration of the.—See Enteritis.

Coloptosis.—Gr. κόλον colon + πτῶσις fall. See Enteroptosis.

Colorless Stools.—**Causes.**—Complete biliary obstruction; conversion of the bile pigments into colorless substances (leukourobilin); milk diet; large amount of mucus in the fæces, as in membranous colitis; large amount of pus in the fæces, as in syphilis, carcinomatous ulceration, or rupture of an appendiceal abscess; excess of fat in the stools, due to any one of the following causes, viz., excessive ingestion of fat, biliary obstruction, deficiency of pancreatic juice due to pancreatic obstruction or disease, and interference with fat absorption due to bowel disease or increased peristalsis, as in catarrhal enteritis, tuberculous enteritis, tabes mesenterica, chronic tuberculous peritonitis, dysentery, cholera, carcinoma of the stomach or intestine, amyloid disease of the intestine, atrophy of the mucosa, leukæmia.

Coma; Stupor; Unconsciousness.—L; Gr. κῶμα; L. *stupor*. Coma means total unconsciousness; stupor means partial unconsciousness, from which the individual may be to some extent aroused.

Causes.—Natural or artifically induced sleep; general anæsthesia; syncope or simple fainting; hysteria; hypnotism; overdose of a sedative drug (alcohol, opium, veronal, etc.); epilepsy; apoplexy; uræmia; trauma; acidosis; (causes: diabetes mellitus, eclampsia, acute yellow atrophy of the liver, portal cirrhosis, hepatic cancer, phosphorus and chloroform poisoning, etc.); sunstroke and heat exhaustion; pernicious malaria; concussion, contusion and compression of the brain; brain tumor; brain abscess; brain syphilis; hemorrhagic internal pachymeningitis; meningitis; hydrocephalus, acquired chronic; dementia paralytica; poisoning with carbon-monoxide, carbolic acid, lead, strychnine; infections (typhoid fever, typhus fever, pneumonia, malaria, mumps, rheumatic fever, smallpox, pyogenic sepsis, acute endocarditis, meningitis, acute miliary tuberculosis, tetanus, trypanosomiasis, etc.); hemorrhage; leukæmia; pernicious anæmia; cachexia of cancer; valvular or myocardial disease; Stokes-Adams disease; pericarditis with effusion; rupture of an aneurysm; coronary occlusion due to acute syphilitic aortitis; pleural irritation, as during irrigation; withdrawal of a large ascitic accumulation; Addison's disease; digestive and infectious diseases of infancy; congenital defects, including birth accidents, with or without hydrocephalus, hæmiplegia, or idiocy; prolonged muscular exertion; malingering.

R. C. Cabot says that conjugate deviation of the head and eyes, stertorous breathing, albumen or sugar in the urine, with or without casts, hemorrhage from the ear, hæmiplegia, aphasia, and Jacksonian epilepsy are not necessarily pathognomonic of the diseases which they commonly suggest.

Combined System Diseases.— Diseases involving both, the afferent (dorsal) and efferent (lateral and perhaps anterior) columns of the cord, and characterized by the association of spastic (or perhaps flaccid) and sensory paralyses with ataxia:

1. Myelitis.
2. Multiple sclerosis.
3. Dementia paralytica (often).
4. Tabes dorsalis (occasionally).
5. Toxic combined sclerosis of the cord, due to profound anæmia, wasting diseases, prolonged suppuration, chronic indigestion and diarrhœa, acute or chronic infections,

pellagra, and poisoning with ergot, and with lathyrus or vetch (lathyrism).

6. Friedreich's hereditary ataxia.

7. Interstitial hypertrophic progressive neuritis of childhood.

Compensated Heart Disease.—See under Cardiac Insufficiency.

Compression of the Brain.—See Concussion, Contusion, and Compression of the Brain.

Compression of the Spinal Cord.—(See under Myelitis.

Concussion, Contusion, and Compression of the Brain.—Simple concussion is indicated by temporary loss of consciousness, followed by headache, dizziness, perhaps nausea and vomiting, possibly convulsions, weakness, mental disturbance, and even, perhaps, a slow pulse, these symptoms being of variable severity and duration.

In contusion the symptoms are more severe, and lumbar puncture usually reveals blood. Fever follows recovery from the initial shock in contusion, but not in simple concussion.

Compression (due to hemorrhage or œdema) is indicated by continued unconsciousness, slow pulse, cyanosis of the face, dilatation of the venules of the eyelids, distention and tortuosity of the veins of the fundus oculi, later a rise of blood pressure, bounding pulse, choked optic discs, and Cheyne-Stokes respiration. An interval of consciousness following an injury, preceded or not by unconsciousness, and followed by unconsciousness, indicates intracranial hemorrhage. (For Cerebral Hemorrhage in the New-born, see Hemorrhage, Meningeal, in the New-born.)

Treatment.—Examine the head carefully for evidences of fracture. Keep the patient quiet, with the head low, and an ice-cap applied. Atropine (*q.v.* in Part 11) is recommended. Lumbar puncture (*q.v.*) is recommended for the relief of cerebral hypertension. Keep the bowels active. The patient should be kept in bed on a light diet for at least two or three weeks, or until all headache has disappeared and the pulse has returned to normal. The bowels should be moved daily. Remember that meningeal hemorrhage or brain abscess may occur months after apparent recovery from fracture of the skull. The onset of symptoms of compression demands an immediate decompressive craniotomy.

Treatment of Fractures of the Skull.—A. Closed Fracture. Enjoin absolute rest and quiet, with an ice-cap to the head. Open the bowels with salines. Give phenacetin or morphine (see Part 11) for headache and restlessness. Operate if symptoms of compression occur. The latter may be due to hemorrhage or to depression of the inner table of the skull. Spoon-shaped depression of the new-born skull should be reduced, if not by antero-posterior compression of the skull, then by operation and elevation of the depression by a blunt steel sound.

B. Open or Compound Fracture.—Cleanse the wound carefully; elevate depressed fragments of bone, even if no symptoms are present, trephining if necessary (it is not necessary to remove all detached pieces); remove clots; suture a wounded dura with catgut; drain, if deemed advisable, to avoid infection.

Trephine in all penetrating wounds of the skull.

C. Basal Fracture.—If there is a discharge of blood or cerebrospinal fluid from the nose or ears, wipe out these passages with a sterile cotton swab moistened in boric acid solution, and insert very loose absorbent cotton or iodoform gauze, and change frequently.

If symptoms of compression occur, one may do Cushing's intermusculotemporal craniotomy, and insert a rubber drain if there is continuous bleeding. A bilateral craniotomy may be required. F. Albert says that lumbar puncture (*q.v.*) is the "only efficient treatment of basal fracture."

Congenital Dilatation of the Colon.—L. *conge'nitus*, born together. See Colon, Dilatation of the.

Congenital Heart Disease.—**The Treatment** is that of compensated valvular heart disease (see under Cardiac Insufficiency). Keep the child warm and guard very carefully against bronchitis.

Treat cardiac failure as described under Cardiac Insufficiency.

Congenital Hydrocephalus.—See Hydrocephalus.

Hypertrophic Pyloric Stenosis.—See Dilatation of the Stomach, Chronic.

Myatonia.—Gr. *μῦς* muscle + *α* neg. + *τόνος* tone. See Dystrophy, Progressive Muscular.

Congestion of the Lungs.—See Pulmonary Congestion.

Constipation, Habitual or Chronic.—L. *constipat'io*, a crowding together. **I. Constipation in Adults.**—Chronic constipation is either atonic or spastic, nearly always the former. In spastic constipation, the small or large bowel is tonically contracted, with

resulting abdominal discomfort, amounting sometimes to colic, often an associated spasm of the sphincter ani, and perhaps band-shaped, narrow cylindrical, or sheep-dung-like fæces. Palpation may sometimes reveal a contracted gut. It may be distinguished from atonic constipation by the relief afforded by morphine or belladonna, perhaps also by the presence of mucus surrounding the stool. Cohnheim regards spastic constipation as a sequel of atonic constipation, in which the hardened fæces have set up a catarrhal inflammation of the intestinal mucosa. The bismuth or barium X-ray examination gives important information (see under Dyspepsia for technique).

(a) Etiology of Atonic Constipation.—Habitual neglect of the calls of nature; sedentary life; habitual use of purgatives or enemata; insufficient food; food deficient in residue, *e.g.*, milk, eggs, and meat; sometimes too much residue; insufficient water drinking; overdigestion and absorption of food; chronic gastric disease; chronic invalidism; debility; obesity; anæmia; cachexia; acute infectious diseases; convalescence from exhausting fevers; senility; neurasthenia; hypochondriasis; cerebrospinal disease (tabes, etc.); diphtheritic paralysis; plumbism; insanity; melancholia; hysteria; worry or grief, etc.; chronic passive congestion of the bowels due to lung, heart, liver, or kidney disease; weakness of the diaphragm caused by emphysema, pleural adhesions, and other chronic thoracic diseases; weak abdominal walls caused by pregnancy, ascites, tumors, obesity, or spinal paralysis; rheumatism of the abdominal muscles; idiopathic dilatation of the colon; senile atrophy of the intestinal mucosa; reflex inhibition due to painful inflammation or traumatism of the abdominal or pelvic viscera; constricting corsets; enteroptosis; elongated ptosed colon; mobile cecum; inflammatory pericolitis; redundant and angulated sigmoid; relaxed vaginal outlet; strictures, stenoses, and tumefactions due to adhesions, tumors, enlarged organs (enlarged prostate, fibromyoma uteri), displaced uterus, and inflammation (tuberculous, luetic, malignant, traumatic, chancroidal, gonorrheal, catarrhal, dysenteric, hemorrhoidal ulceration); morphinism; astringent ingesta, *e.g.*, tea, red wines, chestnuts, hard water (lime salts), alum, copper, iron, lead, bismuth, tannic acid preparations; obstruction to the flow of bile; too short or too long mesentery; diverticula; congenital narrowing of the anus; deviated coccyx; torpor recti or dyschezia; heredity.

(b) Etiology of Spastic Constipation.—Neurasthenia; hypochondriasis; melancholia; hysteria; cerebrospinal disease; senility; overuse of purgative drugs; irritating foods; gastric and intestinal indigestion (hyperacidity); mucous colitis; intestinal ulceration; chronic plumbism; neighboring inflammation; chronic colitis, sigmoiditis, and proctitis; hypertrophied rectal valves due to chronic interstitial inflammation (uncommon); spasm or hypertrophy of the sphincter ani due to fissure, blind fistula, a fish bone, neighboring disease, inflammation, ulceration (traumatic, dysenteric, tuberculous, syphilitic, cancerous, chancroidal, gonorrhœal, hemorrhoidal); hypertrophied levator ani muscles due to chronic uterine, vesical, or rectal disease; hypertrophy of O'Beirne's sphincter, the consequence of spasmodic contraction caused by the irritation of a foreign body, inflammation or ulceration (very rare); chronic invagination due to an abnormally long sigmoid or mesentery, or to straining excited by the presence of a polyp, of stricture, cancer, etc.; rectal prolapse; rectal polypi.

Treatment.—Question and examine the patient carefully in order to ascertain, if possible, the cause or causes of the constipation. In making a proctoscopic and sigmoidoscopic examination, one may choose between the left lateral or Sims' position, the knee-chest position, Mathew's and Hanes's inverted position, using their special table, and the exaggerated lithotomy position. The bladder and bowels should first be emptied. Gant describes the procedure, with the patient in the knee-chest posture, as follows: "The proctoscope or sigmoidoscope is oiled and introduced into the rectum and directed downward and forward until it passes through the anal canal, about two inches. It is then pointed upward and backward until the promontory of the sacrum is reached, when it is again directed downward and forward over the upper rectal valve and into the sigmoid flexure. The obturator is then removed and the air permitted to rush in and dilate the bowel. When this has been accomplished, the sigmoid is examined; and as the instrument is slowly withdrawn, a perfect view of every part of the rectum can be obtained. When the air does not dilate the sigmoid flexure, a pneumatic sigmoidoscope should be introduced, with the obturator in place, until the middle valve has been passed. The obturator is then removed, and the rectum and bowel higher up is inflated and studied step by step, by pressing the bulb from time

to time as the instrument is passed higher up." A great aid to diagnosis is obtained by giving an enema of bismuth and oil in the knee-chest posture, and then taking an X-ray picture.

For the treatment of rectal polypi, hemorrhoids, fissure in ano, fistula in ano, ulceration, colonic dilatation, mucous colitis, visceroptosis, etc., etc., consult the appropriate heading or caption.

Simple spastic constipation is treated the same as mucous colitis (*q.v.*). Massage, electricity, cold baths, and exercises are contraindicated in this affection and in disease or inflammation of the abdominal or pelvic viscera. Hot applications and prolonged tepid sitz-baths are useful. Prolonged rest of mind and body is essential.

℞ Tincturæ belladonnæ foliorum, gtt. lxxx–℥iiss (gtt. v+ to ix+ per dose)
Spiritus menthæ piperitæ, gtt. lxxx (gtt. v+ to vi per dose)
Tincturæ valerianæ, ℥iv–v (gtt. xv–xx per dose)

M. Sig.—Thirty drops in a cup of hot fennel or peppermint tea, t.i.d. Sedative for spastic constipation. (Cohnheim.)

"Constipation due to acute proctitis," says Gant, "can be relieved in short order by alternating cold (60° F.) and hot (110° F.) enemata; the former to be retained for five, the latter for ten, minutes." For spasm of O'Beirne's sphincter due to inflammation, apply hot fomentations to the lower abdomen, and give daily injections of hot oil and bismuth, or a mild antiseptic solution, such as boric acid, one teaspoonful to the pint. Belladonna, with or without morphine, may be useful for the purpose of relaxing spasm.

When the bowel is much occluded by hypertrophy of the sphincter, its divulsion may be attempted with extreme care, to avoid rupture, of which there is great danger. Gant says: "It can be easily and quickly dilated by introducing a large proctoscope up to the obstructed point and then passing a Wales bougie of proper size through it. Divulsion can also be satisfactorily accomplished by tamponing with a rubber bag distended with air or water left inside as long as may be required, or with the Hirschmann dilator. The treatment may be applied daily or two or three times weekly, according to the exigencies of the case." "When the treatment outlined fails, surgical intervention is imperative, and the obstruction should be relieved by colostomy, resection of the sphincter, or by making an anastomosis between the sigmoid above and the rectum below."

For hypertrophied rectal valves, discovered by their resistance to being drawn down by a blunt hook, apply Gant's clamps, or Pennington's clips, or employ Lynch's electric angiotribe.

In hypertrophy of the levatores ani muscles, hot applications may relax the spasm, but great hypertrophy may require the division of the coccygeal attachment of the muscles, either by a subcutaneous tenotomy or an open incision.

For hypertrophy of the sphincter ani, divulse or divide the muscle under local cocaine anæsthesia(see Fissure in Ano). (Gant.)

For redundant and angulated sigmoid, perform sigmoidopexy, or short circuiting lateral anastomosis, or resection.

In operating for chronic invagination, withdraw the slack and anchor it to the inner abdominal parietes. (Gant.)

Cecum mobile is a possible cause of chronic constipation. In itself the condition is not pathological unless a kink is formed, with resulting chronic distention and atony of the cecum, which becomes palpable, associated with local pain, tenderness, and sense of fulness, attacks of colic, and chronic constipation. The symptoms resemble those of chronic appendicitis. A correct diagnosis is facilitated by means of the bismuth or barium meal (see under Dyspepsia) and röntgenoscopy (*q.v.*). Two pictures are taken about eighteen hours after the meal, one with the patient on his back and the other upon his left side. If the cecum is abnormally movable there is quite a difference in its position in the two pictures. The treatment consists in the use of an abdominal binder with an accessory pad placed just to the right of the median line (see Splanchnoptosis), the use, for a while, of daily or less frequent enemata of neutral cottonseed oil, one-half to one-pint, alternately with sodium bicarbonate, three per cent., to dissolve mucus, paraffin oil, or cascara (see Part 11) by mouth, and a general invigorating regimen. Anchoring of the cecum is sometimes but not usually of benefit.

Excluding simple, vagotonic spastic constipation, and the various gross pathological conditions that may act as more or less potent factors in the causation of constipation, there remain a majority of cases without any other apparent cause than atony or torpor or sluggishness of the bowel with diminished secretion. These cases are treated as follows, from six to ten weeks being required to effect a cure:

Enjoin fresh air day and night, regular hours of eating and sleeping, a morning

tepid sponge bath, standing in warm water, followed by a cool or cold douche and a vigorous rubdown (the bath being preceded by a cup of warm cocoa), and lots of outdoor exercise, but rest before and after meals (at least one hour's rest after meals). In lieu of the preferable outdoor sports—tennis, golf, surf bathing, swimming, rowing, horseback riding, mountain climbing—the following exercises recommended by Gant may be practiced once or twice daily, each exercise being repeated five to ten times:

1. Standing erect, with the legs together, slowly bend the trunk at the hips as far as possible to the right and left, and forward and backward.
2. Lying supine, raise the trunk to a right angle with the legs.
3. Reverse the procedure by raising the legs to a right angle with the trunk.
4. Lying supine, flex the knees and draw the thighs close against the abdomen.
5. Standing erect, with hands crossed behind, quickly change to the squatting posture.
6. Leaning forward, draw up the abdominal muscles and diaphragm repeatedly, at the same time taking deep respirations.
7. With both arms extended at a right angle from the body, walk on tip toes.

Abdominal massage may be practiced for fifteen or twenty minutes twice daily (before arising and on retiring, or several hours after meals), with the hand (bimanual kneading), or with a leather or felt-covered two to ten pound cannon ball or bowling ball, the patient's head being raised and the legs and thighs slightly flexed in order to relax the abdominal muscles. The bladder should be empty. Begin the massage over the descending colon in order to empty this first. Vibrasage is of value. "Active stimulation over the head of the colon and sigmoid, and a continuous treatment along the line of the large intestine will give the best results." (Author ?).

Electricity may be employed in daily five-minute sittings. If galvanism is employed, one electrode may be placed within the rectum (best in inefficient defecation or dyschezia), the other moved about constantly over the colon from right to left. A roller electrode may be used. The sinusoidal current of slow periodicity is especially recommended. If faradism is used, the anode is placed over the spine, and the kathode moved with deep pressure over the colon. "The current should be interrupted from two to six times a second." (*Handbook of Therapy of the A. M. A.*)

The head should be raised and the knees drawn up during the treatments, and the bladder should be empty. Thirty or forty daily sittings are sometimes required.

The ethyl ether spray to the abdomen for five to fifteen minutes thrice daily; douches of cold water; large linen compress wrung out of cold water, covered with flannel and worn all night; and the cold sitz-bath for no longer than five or six minutes, taken about one hour before supper, are also recommended.

Treatment by suggestion is often effectual, the suggestion being made that the bowels will act at a specified hour. Interesting and absorbing intellectual activity is effectual in certain cases.

The diet should be coarse and bulky, consisting chiefly of vegetables rich in insoluble cellulose, carbohydrates, fats, and plenty of water, and a modicum of meat, viz., well-boiled vegetables: Brussels sprouts, spinach, cabbage, sauerkraut, cauliflower, onions, carrots, turnips, beets, salsify, asparagus, tomatoes, corn, string beans, lima beans, peas, lentils, cucumbers, cress, radishes, lettuce, celery, rhubarb, mushrooms, olives, oatmeal, cornmeal, hominy; brown, whole meal, ginger, graham, corn, raisin, rye, and bran breads; pumpernickel, bran pudding, bread pudding with fruit sauce, preserves, honey, molasses, grape juice, cider, lemonade, carbonated waters, malted milk, buttermilk, koumyss, matzoon (see Part 11), beer, butter, cream, olive oil, salads with oil, sardines, anchovies, fresh or cooked juicy fruits after each meal: orange (for breakfast), baked apples, prunes, tamarinds, grapes, raisins, melons, pears, peaches, plums, cranberries, currants, figs, dates.

Musser and Piersol give the following recipe for making bran muffins:

Bran flour	2 cups
Wheat flour	2 cups
Sour milk	1 cup
Molasses	4 tablespoonfuls
Soda	2 teaspoonfuls
A little salt.	

Bake in muffin pans, one to be taken at each meal.

Avoid tea, cocoa, chocolate, thick broths, sago, rice, farina, potatoes, liver, pork, salted, potted, or smoked fish and meats, cheese, excess of eggs or milk, nuts, huckleberries, red wines.

The patient should eat slowly and not overeat. A glass of cold water should be taken on rising, and a carbonated mineral water, such as Vichy or Apollinaris or a glassful of cold or hot water to which may be added about fifteen grains of sodium

bicarbonate, should be taken one hour before each meal. Water may be drunk freely between meals.

About one-half to one hour after breakfast, the patient should repair regularly to the toilet.

The occasional employment of laxative drugs may be of service in the beginning of the treatment. Cascara sagrada, aloes, podophyllin, and senna are perhaps the best, as requiring no increase in dosage. On the contrary, the dose may be gradually reduced week by week, until the drug is no longer required. For preparations and dosage consult Part 11. Compound liquorice powder is useful in flatulency because of the contained fennel, and in hemorrhoids,—Ortner.

Laxative mineral waters are:

(a) Saline,—Hunjadi, Apenta, Friedrichshall, Püllna, Birmenstorf, Rubinat, Marienbad, Carlsbad, Bedford, Saratoga (Hathorn), Condal, Carabaña, Congress, Kissingen, Homburg, Rakoczy, Crab Orchard, Ky.

(b) Sulphur, — Aix-les-Bains, Neudorf, Adenau, West Baden, French Lick, Richfield, Sharon Springs, Harrogate, Schinznach.

A daily colonic enema, consisting of from one to three pints of cool or cold water may be injected, if three days of regular repairing to the toilet, etc., fail. It is best given immediately after breakfast. The frequency of administration should be gradually reduced as the constipation improves.

Selected formulæ:

℞ Sulphuris præcipitati,
Pulveris rhei,
Sacchari lactis,
Magnesiæ, aa
M. Sig.—A teaspoonful with a glass of water every morning and evening. (Croftan.)

℞ Aloini..... gr. ⅛
Strychninæ..... gr. 1/120
Extracti belladonnæ foliorum... gr. ⅛
Extracti rhamni purschianæ.... gr. ss
Fiat pilula. Sig.—1 to 2 to 3 pills at bedtime.

℞ Extracti aloes socotrinæ..... gr. xv (gr. 1 ¼ per dose)
Pulveris ipecacuanhæ..... gr. vi (gr. ss per dose)
Pulveris zingiberis, gr. xxiv (gr. ii per dose)
Syrupi, q.s.
Misce et div. in pil. No. 12.
Sig.—A pill to be taken before dinner. (Dr. Baillie's dinner pills.)

℞ Pulveris rhei..... gr. lxxx (gr. x per dose)
Sodii bicarbonatis. ʒii (gr. xv per dose)
Tincturæ zingiberis ♏xl (♏v per dose)
Spiritus ammoniæ aromatici..... ʒii (♏xv per dose)
Aquam menthæ piperitæ, ad..... ʒviii
M. Sig.—Two tablespoonfuls half an hour before food, twice daily (aperient and stomachic). (Yeo.)

℞ Ferri sulphatis.... gr xvi (gr. ii per dose)
Magnesii sulphatis. ʒi (ʒi per dose)
Quininæ sulphatis.. gr. xii (gr. iss per dose)
Liquoris strychninæ 1 per cent..... ♏xl (♏v gr. 1/20 per dose)
Acidi sulphurici diluti..... ♏l (♏v per dose)
Aquæ, q.s., ad..... ʒviii
M. Sig.—Two tablespoonfuls twice a day, an hour before breakfast and dinner. (For constipation in anæmic women). (Yeo.)

℞ Pulveris magnesii,
Pulveris rhei, aa... ʒii
Sodii bicarbonatis,
Sodii carbonatis,
Pulveris sacchari, aa ʒiv
Olei menthæ piperitæ, q.s.
Misce et fiat pulvis.
Sig.—One-half to one teaspoonful in water, two hours after each meal. (For constipation with hyperacidity.) (Allen.)

The correction of gastric hyperacidity with antacids (see Hyperacidity) and of anacidity with dilute hydrochloric acid with meals, and ascending doses of nux vomica before meals (see Anacidity), often cures constipation. (Musser and Piersol.)

℞ Extracti nucis vomicæ exsicatti..... gr. vi (gr. ¼ per dose)
Sodii bicarbonatis.... gr. c (gr. 4 ⅙ per dose)
Extracti pancreatici.. ʒi (gr. 2 ½ per dose)
M. et ft. caps. No. 24.
Sig.—One capsule before each meal. (For "constipation associated with gastric sluggishness or chronic gastritis"; a little ext. belladonnæ, adult dose gr. 1/10 to ⅓, or physostigmin, gr. 1/100 to 1/30, may be added to aid intestinal peristalsis.) (Stengel.)

Says Stengel, nux vomica, belladonna (1 to 3 drops of the tincture at night), physostigmine, the digestive ferments (full doses of pepsin after meals), the cinchona derivatives, and strophanthus "correct digestion and stimulate peristalsis without irritating."

Gant recommends physostigmine and nux vomica for constipation, digestive disturbances, vertigo, etc., occurring during the change of life.

In intractable cases of intestinal stasis, Moynihan advocates partial or complete resection of the colon, especially the last part of the ilium, the cæcum, and the ascending colon.

II. Constipation in Infants. — ETIOLOGY. — Habit; irregularity in nursing; too frequent nursing; food insufficient in quantity or strength; too little fat; too much fat; too little sugar; too much non-fermentable carbohydrate, *e.g.*, dextrins; boiled or sterilized milk; gastric indigestion; anorexia; excessive vomiting; muscular atony (rickets, malnutrition, abuse of purgative drugs, suppositories, and enemata); constipation, lack

of exercise, and tea-drinking in the mother; small anus; tonic spasm of the anal sphincter due to fissure, hemorrhoids, or polypus; congenital narrowing or twisting of the large intestine; dilatation of the colon (*q.v.*).

TREATMENT.—Attend to the patient's dietary, as directed under Infant Feeding. If the infant is nursing at the breast, direct the mother to engage in adequate exercise, to keep the bowels regular, preferably with salines, and to eat more carbohydrate and fat and less nitrogenous food. If there are curds in the baby's stools, the baby should receive several teaspoonfuls of warm boiled water, plain or sweetened, or barley or oatmeal water, before each nursing. Barley and oatmeal waters are laxative, lime water is constipating. Cream, ½ to 1 teaspoonful, may, in cases of fat deficiency, be given before each or every other nursing, or olive oil, or cod-liver oil (see Part 11); but usually, perhaps, more fermentable carbohydrate is required, *e.g.*, after each nursing, an ounce or more of cereal water containing 5 to 10 per cent. lactose, or else ½ to 1 ounce of 10 per cent. aqueous solution of malt soup extract (see Infant Feeding), together with fruit juices (orange or prune) and after the third or fourth month, a little apple sauce (Gerstley). Anointing the anus and buttocks with sweet oil is sometimes effectual.

If need be, one or two ounces of warm sweet oil may be injected nightly for a time, or once or twice a week, to be retained over night, or an oiled glass rod or gluten suppository may be used.

Stretch an abnormally small anus with the finger every two or three days. In tonic spasm of the sphincter, the latter may have to be stretched under ether. Heal fissure in ano by the application of the silver nitrate stick every three or four days.

In bottle-fed infants the fat may possibly need to be increased, but it should not be increased beyond 4 per cent. The sugar may be increased to at least 7 per cent.; or malt sugar may be used in place of milk sugar, and in the same quantity; or one or two drams of sweet manna may be dissolved in the day's feeding. Do not reduce the proteid below 1.5 per cent. for fear of rickets. The milk may be given raw.

If the baby's stools are dry, crumbly, and soap-like (the baby being flabby, somewhat anæmic, and not thriving), the constipation is due to a disproportionate amount of fat over carbohydrate in the diet. High fat in an alkaline intestine (the alkalinity caused by high protein) forms insoluble soaps with calcium and magnesium; in an acid intestine (the acidity caused by high fermentable carbohydrate, *e.g.*, lactose or saccharose) it forms irritating fatty acids. To correct this type of constipation, more fermentable carbohydrate should be added to the food, both to burn up the fat and to favor acid fermentation in the intestine. Gerstley directs that the milk be diluted by adding two-thirds water (see Infant Feeding), and malt soup extract added and gradually increased until the patient improves and the stools return to normal. Then the amount of milk should be gradually increased, and if constipation recurs, due to the increased protein, more carbohydrate should be added. Malt soup extract instead of cane sugar is used because the latter might be too sweet in the quantities required. If no more than six to eight teaspoonfuls of carbohydrate are needed, cane sugar may be used. The milk is diluted to prevent trouble from the high carbohydrate.

Tr. nucis vomicæ is indicated for atony, and iron (eisenzucker or the saccharated oxide; see Part 11) for anæmia.

Where dietetic measures fail, Dennet recommends milk of magnesia, ¼ teaspoonful, in one to four of the bottles a day, as required. After the age of six or seven months, substitute orange juice. If the cause of constipation is inanition or hunger, one should add another ½–1 oz. to each feeding twice daily or scraped raw apple may be useful; or prune juice; or vegetable purées (see Chicago Methods of Infant Feeding).

℞ Mannæ optimi..... ℥i
Syrupi simplicis..... ℥ss
Aquæ cinnamomi, q.s. ad..... ℥i
M. Sig.—A teaspoonful three times a day. (Kerley.)

℞ Lactis magnesiæ,
Syrupi rhei aromatici, aa..... ℥i
M. Sig.—One to three teaspoonfuls daily. (Kerley.)

℞ Fluidextracti cascaræ sagradæ aromatici (Parke, Davis & Co.)..... ℥ii
Sig.—(For dosage at different ages, see Part 11).

℞ Lactis magnesiæ..... ℥ii
Sig.—One-quarter teaspoonful one to four times daily.

℞ Olei ricini: See Part 11 (only for emergencies.)

℞ Hydrargyri chloridi mitis..... gr. i
Sacchari albi, q.s.
Misce et div. in chart. No. x–xii.
Sig.—One powder every hour until the bowels open: (only for emergencies).

In obstinate constipation in older children, Kerley injects high into the colon

every night, four ounces (or less if immediately evacuated) of olive oil, using a four-ounce bulb syringe and a No. 18 American catheter or a small adult rectal tube. The oil is to be retained during the night. The next morning, after breakfast, the child is placed on a stool until the bowels move, or until fifteen minutes have elapsed, when a glycerine suppository is used. After two weeks of such treatment, the oil injections are tentatively gradually withdrawn. Two months or longer are required for a cure.

Consumption.—(See Tuberculosis, Pulmonary.)

Contusion; Bruise.—L. *contu'sio*, from *contun'dere*, to bruise. Employ at once, with a degree of gentleness commensurate with the amount of pain present, centripetal stroking, kneading, hacking, and gentle exercises, the skin being first anointed, perhaps, with an oleaginous substance, such as olive or cottonseed oil, lard, butter, goose-grease, camphorated oil, lard and turpentine equal parts, turpentine liniment, etc.

Where there is much extravasated blood, leeches may be applied, or small incisions or punctures made and the blood pressed out. Hot compresses are serviceable.

Contusion of the Brain.—(See Concussion, Contusion, and Compression of the Brain.)

Convulsions.—L. *convul'sio*, from *convell'ere*, to pull together. **A. Convulsions in Adults.** — CAUSES. — Epilepsy; uræmia; hysteria; apoplexy (cerebral hemorrhage, embolism, or thrombosis); trauma; fracture of the skull; Stokes-Adams disease; meningitis, acute or chronic; encephalitis; brain tumor; brain abscess; sclerosis cerebri; general paresis; cerebral syphilis; cerebral tuberculosis; cerebral arteriosclerosis, and other cerebral affections; chronic alcoholism; pernicious malaria; plumbism; hepatic toxæmia (acute yellow atrophy, eclampsia, portal cirrhosis, etc.); poisoning with strychnine, picrotoxin, camphor, phosphorus, nitrobenzol, ergot, etc.; profound post-hemorrhagic anæmia; Addison's disease; passage of a gall stone; tapping of a pleuritic effusion; exaggerated nervous irritability in pregnancy, in which "an overdistended bladder or bowel, pressure of the head on the perineum, the introduction of a hand to perform version, or excessive after-pains" may bring on a convulsion.

TREATMENT.—Attend to the cause. For repeated convulsions inject, per rectum, a well-diluted aqueous solution of chloral, gr. xlv, with or without sodium or potassium bromide, gr. xxx–xlv. Administer chloroform, if necessary, until the enema acts. Repeat the enema after two hours, if necessary. Hyoscin hydrobromide, gr. $\frac{1}{100}$ to $\frac{1}{50}$, hypodermically, is also recommended. Sustain the heart. Control fever by means of cool or cold sponging, wet packs, and an ice-cap to the head. Feed the patient per rectum, (see Rectal Feeding).

B. Convulsions of Infancy and Childhood.—CAUSES.—Birth traumatism; neurotic or hyperexcitable disposition; gastrointestinal disturbance, *e.g.*, overeating, indigestible food, catarrh, worms, colic; malnutrition and debility; anæmia, rickets, dentition; adenoids and enlarged tonsils; phimosis; elongated prepuce; pressure on the testicles; herpes vaginalis; erosion of the genitals caused by irritating urine, etc.; severe injury or pain; excessively hot bath; sudden violent variation in the surrounding temperature; renal colic; kidney and bladder stones; acute infectious fevers—at the onset or during the course; high fever; syphilis; tuberculosis; status lymphaticus; foreign bodies in the nose or ear; aural ulcer; otitis media; mastoiditis; congenital kidney disease; uræmia; organic disease of the nervous system, *e.g.*, meningitis, encephalitis, cerebral hemorrhage, embolism, thrombosis, abscess or tumor, hydrocephalus; certain drugs, viz., alcohol, opium, atropine, strychnine, santonin, etc.; strong emotion in mother or child, *e.g.*, fright, etc.; congenital heart disease; atelectasis; asphyxia; pertussis; laryngismus stridulus; enlarged thymus; tetany; liver disease; congenital anomalies; epilepsy.

TREATMENT.—To control the convulsions, produce a very light chloroform anæsthesia, and at once inject copious warm enemata until the bowels move thoroughly. As soon as consciousness returns, administer a dose of castor oil, or divided doses of calomel (gr. $\frac{1}{10}$ every fifteen minutes until effectual). Place the child in a quiet, darkened room.

Should the convulsions continue, place an ice-cap to the head, give a hot foot bath, and surround the body with a sheet wrung out of hot mustard water (one tablespoonful of mustard to two quarts of water); keep the mustard pack on until the skin is reddened. At the same time, inject a solution of chloral hydrate and sodium or potassium bromide in one or two ounces of warm milk or mucilage of acacia high up into the bowel through a catheter: at one month, chloral, gr. i; three months, chloral, gr. ii; six months; chloral gr. iii–v, potassium bromide gr. v–x; one year, chloral, gr. iii–vi, sodium bromide, gr. x–xx; two years, chloral, gr. viii. After removing the tube, close the anus by press-

ing the buttocks together with the fingers. Repeat the injection in an hour if necessary, or every two to four hours. By mouth, one-half the dose is given, but give nothing by mouth while the child is in convulsions. Batten advises lumbar puncture (*q.v.*), both for diagnostic purposes and to relieve intracranial pressure.

The inhalation of oxygen (see under Pneumonia) is sometimes effectual.

Hot baths or hot packs are contraindicated when the pulse is weak. Cold tub baths should be given if there is hyperpyrexia.

Keep the patient quiet and on light diet for several days after the convulsions have ceased, and administer sodium bromide, gr. v–viii a day, to a child of one year (see Part 11), with or without antipyrin, or phenacetin for about a week, when the drug may be gradually withdrawn.

Correct any possible etiological factor.

Convulsive Tic.—See Habit Spasm.

Cord, Spinal.—See Spinal Cord Localization.

Corpulence.—L. *corpulent'ia*. See Obesity.

Coryza.—L.; Gr. *κόρυζα*. See Nose Diseases, Part 8.

Costiveness.—See Constipation.

Cough.—**Causes.**—Pharyngitis; tonsillitis; elongated uvula; adenoids; nasal, aural, pharyngeal, gastric, hepatic, and uterine reflex influences; pressure upon the vagus caused by mediastinal tumors, posterior mediastinal abscess due to Pott's disease, and enlarged tracheo-bronchial glands; aneurysm or tumors pressing upon the trachea or bronchi; heart disease, valvular, myocardial or congenital; pericardial effusion; pleurisy; adherent pleura; laryngitis; tracheitis; bronchitis; foreign bodies in the air passages; acute pulmonary congestion; pneumonia; phthisis; influenza; pertussis; asthma; hay fever; emphysema; bronchiectasis; pulmonary abscess; pulmonary gangrene; pulmonary œdema; pulmonary cirrhosis; pulmonary actinomycosis; pulmonary tumors; pulmonary distomiasis; echinococcus cyst of the lung; pneumokoniosis; pulmonary infarction; habit (see Habit Spasm); nervousness; hysteria.

Kerley says: "An immense majority of obscure coughs in children are due to adenoids."

Coupling of the Heart Beats.—See Arrhythmia.

Cow Pox.—See Vaccinia.

Craft Palsies.—See Cramps, Professional.

Cramps, Heat.—See Sunstroke.

Cramps, Professional.—Professional cramp is "a spasm of a group of muscles, due to excessive use in one's daily occupation" (Dorland), such as writing, typewriting, type-setting, sewing, telegraphy, hammering, weaving, letter sorting, cigarette rolling, watch-making, music playing, milking, ball throwing, etc.

Etiology.—Overwork of the function affected is the immediate cause. Contributing causes are a faulty cramped position of the acting parts, including droop shoulder in writing, traumatism, poor health, neurasthenia, worry, etc.

The Prognosis is uncertain.

Treatment.—The affection is a neurosis and should be treated as such. Rest of the function involved is the first essential. Starr advises a rest of two years; a change of occupation is best. Besides, a general tonic regimen is indicated: change of scene, rest of mind and body, adequate healthful exercise, fresh air day and night, regular hours of eating and sleeping, an abundance of good food, abstention from tea, coffee, alcohol, tobacco, and excessive venery, and perhaps a tonic, such as iron, strychnine, arsenic, the hypophosphites, and codliver oil. (See Part 11.)

Massage, manual or vibratory, and mild galvanization, practiced for five to ten minutes daily for a number of months, is of value. Local cold or hot compresses, kept on for about twenty-four hours at a time, are useful for the relief of pain. The practicing of movements opposed to the cramp movements is advised.

In writer's cramp, various devices may be resorted to with more or less success, such as, the use of a large penholder; of a stub pen; of a penholder thrust through a cork and the latter held in the palm of the hand; the use of a bracelet (Nussbaum's) for holding the pen; holding the pen between the index and second fingers; the use of the wrist, or the entire forearm, or the shoulder in writing, instead of the fingers; changing the slant of writing; using the unaffected hand; or the employment of a typewriter.

Cramp, Tailor's or Shoemaker's.—See under Tetany.

Cranial Nerve Affections.—**1. Olfactory Nerves.** (See Nose Diseases, Part 8, Anosmia, Cacosmia, Hyperosmia, and Parosmia.)

2. Optic Nerve.—See in Eye Diseases, Part 6, Amblyopia and Amaurosis without Ophthalmoscopic Change; Optic Chiasma, Tract, and Centres; Optic Atrophy; Optic Neuritis; and Retinitis.

3. Motor Nerves of the Eyeball.—(*q.v.*)

4. Hypoglossal Nerve.—(*q.v.*)

5. Trigeminal Nerve.—(*q.v.*)

6. Vagus Nerve.—(*q.v.*)
7. Facial Nerve.—(*q.v.*)
8. Auditory Nerve.—See Ear Diseases, Part 7.
9. Glossopharyngeal Nerve.—(*q.v.*)
10. Spinal Accessory Nerve.—(*q.v.*)

Craw-Craw.—See Skin Diseases, Part 5.

Cretinism.—An uncommon constitutional disease of infancy and childhood, due to a deficiency of the thyroid secretion (hypothyroidism) and characterized by the following symptoms: body short and broad; face large and bloated looking; forehead low and broad, nose flat, nostrils large, lips thick, tongue large, pads of fat in the supraclavicular and other regions; skin pale, thick, inelastic, dry, scaly, and cold; hair thin, teeth brittle and carious; pudgy, pawlike hands, large abdomen, low body temperature, imbecility or idiocy. The disease is clinically the same as the myxœdema of adults and cachexia strumipriva or operative myxœdema (*q.v.*)

There are two varieties of cretinism, an endemic variety which occurs in goitrous districts, and a sporadic variety with the following etiology: congenital absence of the thyroid gland; inflammation and atrophy of the gland following typhoid fever, influenza, measles, enteritis, tuberculosis, traumatism; bad hygiene; parental hypothyroidism; alcoholism, etc.

The symptoms may not appear until after the child has been weaned, or much later.

Cretinism should be distinguished from rickets, dwarfism, mongolian idiocy, achondroplasia, congenital adiposity, sclerema neonatorum, and hydrocephalus.

Treatment.—

℞ Glandulæ thyroideæ siccæ, gr. ?, tabellæ No. ? vel Thyroidei sicci.

Begin with a small dose, gr. $\frac{1}{16}$ at 3 months of age, gr. $\frac{1}{8}$ at 6 months, gr $\frac{1}{6}$ at 9 months, gr. $\frac{1}{4}$ at 12 months, gr. $\frac{1}{2}$ at 18 months—once to thrice daily, and gradually increase the dose up to 5 to 6 to 10 to 15 grains a day, or until the child is normal, or symptoms of thyroidism appear; then reduce the dose until the proper amount required to maintain the mental and bodily integrity is found. The latter dose must be continued indefinitely.

The symptoms of thyroidism which demand a temporary withdrawal of the thyroid medication are as follows: tachycardia, palpitations, restlessness or nervousness, insomnia, tremor, pallor, sweating, fever, sometimes coryza, anorexia, nausea, vomiting, diarrhœa, rapid emaciation.

Leonard Williams says: "The recumbent pulse should never be allowed to go above 95, and when the temperature rises to normal the drug should be suspended for a time." It should be suspended too "if the weight begins to fall." It is "a safe plan," he says, "to intermit the treatment for one week in every four." He says also that the effect of the thyroid extract is "considerably enhanced if it is exhibited in combination with three other drugs, namely, iodine, arsenic, and calcium:

℞ Calcii iodidi..... gr. v
Liquoris arsenicalis (Fowler's solution)..... ♏ii
Aquam chloroformi, ad..... ℥ss

M. Sig.—One-half ounce t.i.d.p.c. Suspend every fourth week coincidentally with the thyroid extract. (Leonard Williams.)

The diet which has been found best for cretins consists of milk, eggs, butter, vegetables, cereals, fruit, and little or no meat, no alcohol, and the least possible amount of salt.

Rest, fresh air day and night, warm clothing, a warm climate in winter, and frequent warm baths are of important consideration. General massage is very beneficial.

In endemic cretinism, the boiling of the drinking water may be a possible preventive.

If thyroid treatment proves ineffectual, pituitary extract (consult Part 11) may be tried experimentally.

Crile's Anoci-Association.—Gr. *a* neg.; L. *nocer'e* to injure. See under Shock.

Croup, Membranous; Laryngeal Diphtheria.—See Diphtheria.

Croup, Non-Membranous, or False, or Spasmodic.—An old name for acute catarrhal laryngitis and also for laryngismus stridulus; called spasmodic as distinguished from continuous croup or laryngeal diphtheria.

Croupous Bronchitis.—See Bronchitis, Fibrinous.

Pneumonia.—See Pneumonia, Lobar.

Cryptogenetic Anæmia.—See Anæmia, Pernicious.

Cupping.—A dry cup is applied as follows: A tumbler is swabbed quickly with alcohol, the edges wiped dry, the alcohol ignited and allowed to burn for a few moments, and the cup then quickly applied.

In applying a wet cup, first disinfect the skin by means of tincture of iodine, then apply a dry cup as described above; now scarify the congested skin with an instrument consisting of lancet blades on a spring, and reapply the dry cup.

Cutaneous Ulcers.—See Ulcers, Cutaneous.

Cyanosis.—Gr. κύανος blue. **Causes.**—Simple "weathering" in healthy persons;

exertion in high altitudes; cardiac disease, especially mitral and congenital disease; pericardial effusion; pulmonary disease, especially emphysema and pneumonia; anæsthesia in excess; erythræmia; convulsions; hysteria; laryngeal obstruction or spasm; apoplexy; cholera; intestinal anthrax; methæmoglobinæmia, due to potassium chlorate, carbon monoxide, acetanelid, phenacetin, antipyrin, intestinal disturbance (see Intestinal Intoxication), and microbic infection; sulphæmoglobinæmia (see Intestinal Intoxication); tetany; mediastinal tumors obstructing the superior vena cava; traumatic asphyxia (extreme cyanosis of the head, face, and neck due to severe injury of the thorax and abdomen); paralysis; local pressure; arteriovenous aneurysm; Raynaud's disease; scleroderma.

Cyclic Albuminuria.—Gr. *κύκλος* circle. See Albuminuria.

Cystic Degeneration of the Kidney.—See Genito-Urinary Diseases, Part 3.

Cysticercosis.—Gr. *κύστις* bladder + *κέρκος* tail. See Echinococcus Disease, and Tænia Solium, under Tapeworm Infection.

Cystinuria.—See Nephrolithiasis.

Cystitis.—See Gynæcology, Part 2, or Genito-Urinary Diseases, Part 3.

Cysts of the Pancreas.—See Pancreas, Cysts of the.

Dakin's Solution.—See Part 11.

Dandy Fever.—See Dengue.

Deafness.—See Ear Diseases, Part 7.

Decomposition. See Marasmus.

Debility; Asthenia.—L. *de'bilis*, weak; Gr. *α* priv. + *σθένος* strength. **Causes.**—Overwork; bad hygiene; anæmia; neurasthenia; tuberculosis; nephritis; cardiac disease; obesity; diabetes; Addison's Disease; exophthalmic goitre; myxœdema and cretinism; malignant disease; influenza; typhoid fever; toxæmia in general.

Treat the cause.

Decompensation of the Heart.—See Cardiac Insufficiency.

Decubitus.—See Bed-Sore.

Delicate Infants.—See Premature and Delicate Infants.

Delirium Tremens.—L. *delir'ium* + *trem'ere*, to shake; delirium with trembling. (See Alcoholism.)

Dementia Paralytica; General Paresis.—L. *de*, neg. + *mens*, mind; Gr. *παρά* beside + *λνέιν* to loosen; *πάρεσις* relaxation. A chronic progressive meningo-encephalitis, characterized by the following symptomatology: perhaps neurasthenic symptoms at the onset, change in character, forgetfulness, indifference, irritability, unseemly conduct, delusions of grandeur, slow hesitating speech and syllable stumbling (get the patient to say "truly rural," "artillery cavalry brigade," "around the rugged rock the ragged ruffian ran"), blank facial expression, sometimes restlessness and expansive delirium, sometimes hypochondriasis, tremor of the facial muscles, tongue and hands, writing tremulous and letters and syllables omitted, reflex immobility of the pupils to light and sometimes also to accommodation, deep reflexes diminished or exaggerated, epileptiform and apoplectiform attacks, progressive dementia, pareses and paralyses, lymphocytosis and albumin in the cerebrospinal fluid, Wassermann test usually positive. The spirochæta pallida has been demonstrated in the cerebral cortex.

General paresis and tabes evidently represent but different localizations of the same underlying affection.

Prognosis.—General paresis is fatal usually within two to five years; but life is occasionally prolonged ten or fifteen years. Remissions may occur.

Etiology.—Syphilis is the most important cause. Other causal influences are mental strain, worry and anxiety, physical strain, excesses in alcohol and venery, heat stroke, cerebral traumatism.

Treatment.—Administer a course of salvarsan or neosalvarsan, followed by mercury and iodides intermittently, with tonics in the intermissions (see Syphilis). Enjoin physical and mental rest, and prohibit alcohol and sexual indulgence. A daily hot bath and daily massage are very beneficial.

For restlessness and insomnia employ cold to the head, hot baths, wet packs, massage, and the sedative drugs given under Insomnia. Starr recommends active purgation for great restlessness, with the object of producing anæmia of the brain.

The subarachnoid injection of serum salvarsanized in vivo, (Swift-Ellis) or salvarsanized in vitro (Ogilvie) or mercurialized (Byrnes) is probably of no material value. Some one has suggested lumbar puncture one hour after the intravenous injection of arsenic with the idea of drawing serum into the central nervous system.

Dengue; Break-Bone Fever.—Spanish *dan'gwa*. Syn.—Dandy Fever, Sun Fever, Solar Fever. An acute, infectious, epidemic, tropical and subtropical disease, caused by a filtrable organism transmitted by the culex fatigans and stegomyia fasciata mosquito, and characterized by an incubation period of one to four to five days, followed abruptly

by chills, coryza, severe headache, pains and inflammation in the muscles and joints, fever, and an erythematous rash; these symptoms lasting from two to five days, followed by a remission of twelve hours to three or four days with sweating and prostration, and a second, less severe, paroxysm lasting twenty-four to thirty-six hours, and followed by a tardy convalescence and recovery. The disease is very rarely fatal.

Hemorrhages from the mucous surfaces and vomiting may occur, and give rise to the suspicion of yellow fever.

Treatment.—Put the patient to bed on liquid diet, and open the bowels with calomel in divided doses, followed by a saline. Employ cold sponging, cold packs, and cold applications to the head and joints for the fever and pain. Phenacetin, antipyrin, aspirin, codeine and belladonna are of service; but morphine, gr. ¼, hypodermically, is occasionally required. Oil of wintergreen and spirits of camphor, equal parts, is recommended for rubbing the back and joints (see Part 11 for drug formulæ, etc.)

During convalescence prescribe tonics (see Anorexia, and Anæmia, for formulæ). Potassium iodide is recommended at this time for the joint pains.

Isolate the patient until desquamation has ceased, and screen him against mosquitoes.

Dercum's Disease.—See Adiposis Dolorosa.

Dermato-Myositis.—Gr. δέρμα skin; μῦς muscle + -ιτις inflammation. See Myositis.

Diabetes, Bronzed.—Gr. διά through + βαί'νειν to go. See Hæmochromatosis.

Diabetes Insipidus.—A rare chronic affection, characterized by great thirst and the continued excretion of a large amount of pale urine of low specific gravity, containing no sugar, albumin, or casts.

Etiology.—Diabetes insipidus or mellitus, albuminuria, tuberculosis, syphilis, or gout in the parents; exposure; the drinking of large amounts of cold water or alcohol; hysteria; lesions involving parts of the middle lobe of the cerebellum, medulla, pons, or pituitary body, *e.g.*, traumatism, tumors, hemorrhage, arteriosclerosis, hydrocephalus, general paresis, tuberculosis, syphilis, basilar meningitis, injury of the floor of the fourth ventricle just in front of the glycosuric centre, otitis media; rarely spinal cord disease; abdominal affections involving the solar plexus, *e.g.*, tumors, tuberculosis, aneurysm; section of the greater splanchnic nerve; inability on the part of the kidneys to secrete a concentrated urine, especially the salts and urea. Dyspituitarism (depression of the pars intermedia) may possibly be the most common cause.

Transitory bitemporal hæmianopsia and headache often occur in syphilitic basilar meningitis. Persistent bitemporal hæmianopsia with headaches succeeded by optic atrophy indicates tumor of the hypophysis (see Acromegaly). To examine for hypophysial tumor, obtain an accurately transverse skiagram of the head by placing a bullet in each external meatus and seeing that the shadows of the bullets are accurately superimposed (see Röntgenology.)

The renal type of the disease may be diagnosed by administering five drams of sodium chloride: the normal kidney will excrete this amount within twenty-four hours, whereas in renal insufficiency, several days may be required (see Urinalysis).

For other causes of polyuria, see Polyuria.

Prognosis.—This depends upon the cause. It is usually not good as to cure, except in so-called idiopathic cases (cases showing no tangible cause), in which a spontaneous cure sometimes occurs.

Treatment.—Fluids should not be restricted, say Osler and W. Langdon Brown; but Futcher, Forchheimer, and Ralfe favor the gradual reduction of fluids, say by a pint a day or every other day, stopping when the corresponding reduction in the polyuria ceases. Where the output of water is greater than the intake, and in the renal type of the disease, it is obvious that fluids should not be restricted. Acidulated waters tend to diminish the thirst. Meat and protein food in general and salt should be restricted in order to diminish the concentration of the urine. Meat extracts, tea, coffee, and alcohol should be forbidden. Vegetables, cereals, carbohydrates (rice, tapioca, sago, etc.) and fresh butter and other fats are appropriate. Constipation should be corrected. A general tonic regime —rest, adequate exercise, fresh air day and night, baths, galvanization, arsenic and iron—is indicated (see Part 11 for drugs).

In the presence of a positive Wassermann reaction or a positive history of syphilis, specific treatment should, of course, be applied (see Syphilis).

Drugs are of no great permanent benefit.

1. Fluidextracti ergotæ, ɱx, t.i.d. Be on the lookout for ergotism.

2. Theocin sodio-acetatis, gr. ii–v, twice or thrice daily, p.c. This drug increases the permeability of the kidneys to solids, and thus removes the necessity for polydipsia.

3. Pulveris radicis valerianæ, gr. v, t.i.d., gradually increased to ʒii a day. Zinci

valeratis, gr. iv–xv, gradually increased to gr. xxx, t.i.d. Tincturæ valerianæ, ℥i–ii, three or four times a day, even up to ℥iv four times a day.

4. Sodii vel potassii bromidi, gr. v–x, t.i.d.

5. Antipyrinæ, gr. v–x, t.i.d.

6. Tincturæ belladonnæ, ♏v–x in water, t.i.d., gradually increased until the skin flushes, the throat becomes dry, and the pupils dilate.

7. Codeinæ, gr. ss, t.i.d., up to 4 to 6 grains daily.

8. Extracti opii, gr. ss, t.i.d., gradually increased up to 4 to 6 grains daily.

Prompt relief of polyuria and thirst follows the intramuscular or intravenous injection of a solution of extract of the posterior lobe of the pituitary body, due, possibly, to vaso-constriction of the renal vessels. Good results are reported from the hypodermic administration of strychnine nitrate in large doses. Lumbar puncture may be tried.

Diabetes Mellitus.—Gr. διά through + βαίνειν to go; μέλι honey; L. mel. A chronic disorder of carbohydrate metabolism in which the ability of the body economy to assimilate carbohydrates is diminished, the latter consequently accumulating in the blood as glucose (hyperglycæmia), which is excreted in the urine (glycosuria). The chief symptoms are polyuria, increased thirst and appetite; debility; often emaciation, especially in the acute rapid cases in young people, whereas, in chronic mild cases in the middle-aged the patient is apt to be obese; the urine pale, of high specific gravity, and containing glucose (always test the urine from a mixed twenty-four hour sample, see Urinalysis). Other common symptoms are sexual impotence; a tendency to moroseness; various neuralgias; lumbar pain; cramps in the calves of the legs; peripheral neuritis; a tendency to furuncles, carbuncles, otitis media, eczema, gangrene, and perforating ulcer of the foot; pruritius,general or local; a "deep red color" of the face; constipation; failure of vision due to cataract or retinitis; acidosis (acid intoxication with β-oxybutyric and diacetic acids), with resulting lassitude, breathlessness or deep breathing, pharyngeal or epigastric pain, nausea, vomiting, various nervous manifestations, increasing drowsiness, and finally coma (see Acidosis and Metabolism). The occurrence of diabetic coma is favored by constipation, too sudden changes in the diet, a prolonged carbohydrate-free diet, excessive fatigue, anxiety, carbuncle, an operation, and pneumonia.

Causes of Glycosuria (a permanent glycosuria means diabetes mellitus).—The excessive consumption of sugar (alimentary or dietetic glycosuria, common in children and of no significance; the ingestion of over 150 to 300 grams of glucose by a normal individual causes a temporary glycosuria); convulsions; asphyxiation; certain poisons, *e.g.*, phosphoric acid, hydrochloric acid, lactic acid, chloroform, ether, amyl nitrite, adrenalin, strychnine, alcohol (especially champagne), chloral, morphine, veronal, cocaine, mercury bichloride, phosphorus, arsenic, cantharidin, chromates, uranium, curare, methyldelphinin, caffeine, carbon monoxide, carbon dioxide; obesity; gout; rarely syphilis; pregnancy; sometimes the infectious diseases; cachexias; severe anæmia; exophthalmic goitre or hyperthyroidism; extirpation of the thyroid gland; diseases of the liver causing a disturbance of its glycogenic function; general anæsthesia; heredity (the Jewish race); diseases of the central nervous system, functional or organic, *e.g.*, traumatism, cerebral hemorrhage, tumor, general paresis, tabes, multiple sclerosis, meningitis, traumatic neurosis, nervous shock or strain or worry, mania, melancholia, hysteria, pituitary disease (irritative lesions of the hypophysis increase its internal secretion and cause hyperglycæmia; removal of the hypophysis, on the other hand, increases the toleration for carbohydrates); multiple neuritis; tumor or inflammation of the vagus; disease of the abdominal sympathetic ganglia; pancreatic disease causing interference with the internal secretion of the islands of Langerhans (hemorrhagic pancreatitis, cancer, hepatic or pancreatic calculi, catarrh of the ducts, chronic interstitial pancreatitis, hæmochromatosis); the administration of phloridzin, and the intravenous injection of large amounts of physiologic salt solution, producing a glycosuria of renal origin, not associated with hyperglycæmia (see Metabolism).

Prognosis.—The prognosis depends upon the cause of the glycosuria. It is good in those cases in which the cause is removable, that is, in alimentary glycosuria and that due to mental strain and worry, etc. It is usually good, as to life, in middle-aged obese patients, although a cure is rare. It is bad in the young; in children death usually occurs within six months. The prognosis is relatively good when no sugar is excreted on a non-carbohydrate diet. The occurrence of diabetic coma is practically invariably fatal. The occurrence in the urine of β-oxybutyric acid, or of its derivatives, diacetic acid and acetone, is a warning of

impending acid intoxication, which, if unchecked, leads to coma (see Acidosis and Urinalysis).

A case may be considered mild if glycosuria is not produced by less than 50 gms. of carbohydrate daily; moderate, if glycosuria is produced by 10 to 50 gms. of carbohydrate; severe, if glycosuria is produced by not over 10 gms. of carbohydrate daily.

Treatment.—The basic aim of treatment, as formulated by Dr. Frederick M. Allen, is to avoid overtaxing the weakened pancreatic function, just as in dyspepsia the aim is to avoid overtaxing the weakened gastric function, and so allow of its recuperation as far as possible. By this course, the hyperglycæmia and glycosuria will lessen or disappear, the power of assimilating carbohydrates will increase, and the danger of acid intoxication will diminish.

Enjoin, to begin with, correct living—a calm mental life (a vacation and change of scene once or twice a year), active daily exercise in the fresh air, short of undue fatigue (massage if exercise cannot be taken); light woolen underwear and adequate outer clothing to preserve the body heat; a daily bath, lukewarm for thin and weak patients, an occasional Turkish bath for obese patients; regular hours of eating and sleeping; at least nine hours of sleep; sleeping with the windows open; daily cleansing before breakfast of the mouth and teeth with brush, castile soap, and warm water; care of the bowels. One hour before each meal the patient should drink a glassful of hot water, to which may perhaps be added a quarter to half a teaspoonful of sodium bicarbonate; or Apollinaris or Vichy may be taken instead.

The Allen-Joslin method of treatment is as follows: Begin treatment by omitting fat (butter, lard, oil, cream, etc.) from the customary diet. After two days of a fat-free diet, omit protein (meat, fish, egg albumen, curd of milk), and then reduce the carbohydrate (cereals, vegetables, fruits, sugar) by one-half each day until only 10 grams is taken daily. Then fast for four days or less, as required to render the urine sugar-free, allowing during the fast water and clear, thin, meat broths freely, and plain tea or coffee in moderation, sweetened if desired with saccharin (about ½–1 gr. to 8 fl. oz.). Whiskey, one ounce three times a day, may be taken if desired. Weak patients should be in bed during the fast; stronger patients may exercise, in order, thereby, to shorten the duration of the fast. Examine the mixed twenty-four-hour urine each morning before breakfast for sugar and acetones (see Urinalysis).

Fat is completely omitted prior to the withdrawal of protein and carbohydrate in order to avoid the occurrence or an increase of acidosis. Joslin says that acidosis may be produced in normal individuals within three days by the omission of carbohydrate from the diet; and this acidosis may reach dangerous proportions if the quantity of fat is at the same time increased.

If glycosuria is still present at the end of four days of fasting, allow a little protein or carbohydrate for several days, and then fast again.

When the urine has been free from sugar for twenty-four hours, give, on the first day, from 150 to 200 grams (containing approximately 5 grams of available carbohydrate) of mixed green vegetables of the "5 per cent. group" (see Table), best cooked by steaming in a double boiler so that nothing may be lost.

If no glycosuria occurs, add, on the second day, vegetables equivalent to five more grams of carbohydrate; and add this amount each day until twenty grams of carbohydrate are given. Then add five grams every other day until glycosuria occurs, or the patient is receiving as much as three grams of carbohydrate per kilogram (2.2 lbs.) of body weight in twenty-four hours. After the first day or two, one may give vegetables of the 10 per cent. group (75 grams equals about 5 gms. carbohydrate), and later those of the 15 and 20 per cent. groups, followed by the addition of fruits, and finally, if glycosuria has not appeared, oatmeal and bread (see Table).

The amount of carbohydrate that just falls short of producing glycosuria represents the patient's tolerance for carbohydrate. This tolerance usually increases by treatment. The patient should, however, be kept well within the limit of tolerance for a considerable period of time.

When the urine has been sugar-free for three days (and, as a rule, while still testing the carbohydrate tolerance), add protein (egg albumen, non-fatty fish or lean meat) at the rate of 15 grams daily (see Table), until 1 gram of protein per kilogram (2.2 lbs.) of body weight is reached in adults, unless this much provokes glycosuria even in the absence of carbohydrate from the diet. Children require 2 or even 3 grams of protein per kilogram of body weight. Some adults may later require 1.5 grams per kilogram. The patient should, if possible, receive at least 1 gram of protein daily per kilogram of body weight, the carbohydrate

being restricted, if necessary, to ensure a sugar-free urine, and not the protein.

When the daily amount of protein fed has reached 1 gram per kilogram of body weight, add gradually increasing amounts of fat (by 25 grams a day, or, in severe or obese or elderly or acidosis cases, only 5 to 10 grams), until the total daily diet provides about 30 calories per kilogram of body weight, unless glycosuria or acidosis supervenes. Should glycosuria occur, fast the patient for twenty-four hours, or until the glycosuria disappears, and begin again slowly, aiming to avoid a second appearance of sugar.

The diabetic should fast one day out of every seven, say on Sunday, or else restrict the calories by about one-half.

Divide the carbohydrate in the diet between the three meals, and always include vegetables of the 5 per cent. group. For a given quantity of 5 per cent. vegetables, one may substitute one-half as much 10 per cent., one-quarter as much 15 per cent., and one-sixth as much 20 per cent. By cooking vegetables in three changes of water, most of the starch and sugar is removed.

The normal adult requires, at rest, about 25 calories per kilogram (2.2 lbs.) of body weight; at light work, 30 calories. Children of two years require 80 calories per kilogram; six years, 70 calories; twelve years, 50 calories. In old age less calories are required than for adults.

The normal adult (of about 70 kilograms, or 154 lbs.), at moderate physical work, consumes per day about 400 gms. of carbohydrate, 100 gms. of protein, and 100 gms. of fat, or 2900 calories; but smaller amounts are usually sufficient, *e.g.*, 70 gms. of protein, 300 gms. of carbohydrate, and 100 gms. of fat. The diabetic should confine his diet to the minimum normal caloric requirements. The daily carbohydrate allowance in the diabetic diet seldom exceeds 25 per cent. of normal, or 100 grams, but there is a compensatory increase of fat (no more, however, than is necessary to maintain the body weight). (Joslin.) Joslin believes that diabetes is usually due to overeating (especially of sugar) and lack of exercise. Strenuous mental work also plays a part. He says the diabetic should be 10 to 20 per cent. below the average weight for his height and age (see Weight), so as to obviate the necessity for a superabundance of food to supply an overly large body. He needs 25 to 30 calories per kilogram of body weight, or 12 to 14 calories per pound, which is a little less than that for the normal individual.

Joslin's Treatment of Acidosis (see also Acidosis).—Put the patient to bed and keep warm. Open the bowels with enemata. Administer one quart of hot liquids (water, very weak tea or coffee, consommé) slowly within six hours (a glassful every one to one and one-half hours). If the patient is nauseated, administer the same amount of normal saline solution (℥i ad Oi) per rectum, subcutaneously, or intravenously. Omit fat from the diet, and give at least one gram of carbohydrate per kilogram of body weight per twenty-four hours (as orange juice, or strained oatmeal gruel, or skimmed milk, or bread, see Table). Wash out the stomach if food is present or the stomach dilated (see under Dyspepsia for technique). Sustain the heart with digitalis or caffeine (see Part 11). Avoid alkalies. Less fluids are required if alkali is omitted.

Joslin's Diet Table.

Foods arranged approximately according to percentage of carbohydrates. The foods in each group are listed according to their carbohydrate content, lettuce, for instance, containing about 2 per cent., and string beans about 6 per cent.

5 per cent.

Vegetables, fresh or canned (actually available carbohydrates, 3 per cent.).—Lettuce, cucumbers, spinach, asparagus, rhubarb, endive, vegetable marrow, sorrel, sauer kraut, beet greens, dandelion greens, Swiss chard, celery, tomatoes, Brussels sprouts, water cress, sea kale, okra, cauliflower, eggplant, cabbage, radishes, leeks, string beans, broccoli.

Fruits.—Ripe olives (20 per cent. fat); grapefruits; lemons.

Nuts.—Butternuts, pignolias.

Miscellaneous.—Unsweetened and unspiced pickles, clams, oysters, scallops, liver, fish roe.

10 per cent.

Vegetables (actually available carbohydrate 6 per cent.).—Pumpkin, turnip, Kohlrabi, squash, beets, carrots, onions, mushrooms.

Fruits.—Oranges, cranberries, strawberries, blackberries, gooseberries, peaches, pineapples, watermelons.

Nuts.—Brazil nuts, black walnuts, hickory nuts, pecans, filberts.

15 per cent.

Vegetables.—Green peas, artichokes, parsnips, canned lima beans.

Fruits.—Apples, pears, apricots, blueberries, cherries, currants, raspberries, huckleberries.

Nuts.—Almonds, English walnuts, Beech nuts, pistachios, pine nuts.

20 per cent.

Vegetables.—Potatoes, shell beans, baked beans, green corn, boiled rice, boiled macaroni.

Fruits.—Plums, bananas, prunes.

Nuts.—Peanuts.

Chestnuts.—40 per cent.

THIRTY GRAMS, OR CUBIC CENTIMETRES, OR ONE OUNCE, OF EACH OF THE FOLLOWING CONTAIN APPROXIMATELY

	Protein grams	Fat grams	Carbohydrate grams	Calories
Broth	0.7	0	0	3
Meat (uncooked, lean)	6	3	0	50
Meat (cooked, lean)	8	5	0	75
Bacon (cooked)	5	15	0	155
Fish (cooked cod, haddock)	6	0	0	25
Oysters, six	6	1	4	50
Egg, one	6	6	0	75
Egg albumen, one	3	0	0	12
Egg yolk, one	3	6	0	66
Milk	1	1	1.5	20
Cream, 20 per cent.	1	6	1	60
Cream, 40 per cent.	1	12	1	120
Cheese	8	11	0	130
Butter	0	25	0	225
Oatmeal, dry weight	5	2	20	120
Potato	1	0	6	30
Bread	3	0	18	90
Vegetables, 5 per cent. group	0.5	0	1	6
Vegetables, 10 per cent. group	0.5	0	2	10
Orange, one small	0	0	10	40
Grapefruit, one	0	0	20	80
Brazil nuts	5	20	2	210
Olive oil (shake in water to remove fatty acids)	0	30	0	270

1 gram protein=4 calories; 1 gram fat=9 calories; 1 gram carbohydrate=4 calories; 1 gram alcohol=7 calories; 6.25 grams of protein contain 1 gram of nitrogen.

In the place of bread, which is usually better excluded from the routine dietary of the diabetic, the following substitutes are serviceable.

Bran Biscuits (contain no carbohydrate, and serve as a useful vehicle for the administration of butter and fats and for the prevention of constipation:

Bran	60 grams or 2 oz.
Salt	¼ teaspoonful
Agar-Agar, powdered	6 grams or 1½ drams
Cold water	100 c.c. (½ glass)

Tie the bran in a cheesecloth bag and wash under a cold water tap until the wash water is clear (1 hr., to remove starch). Mix the agar in cold water and bring to the point of boiling. Add to the washed bran the salt and the hot agar solution. Mold into three cakes. Place in pan, and when firm and cold, bake in moderate oven from 45 to 50 minutes.—Rockefeller Institute Hospital recipe, copied from the *Journal of the A. M. A.*, October 7, 1916. The addition of eggs and butter or bacon grease render them more palatable.

Akoll Biscuit (Huntley and Palmer), 2.7 per cent. carbohydrate; 0.41 g. nit. in each biscuit; 20 oz. equivalent to one ounce of white bread.

Gluten Meal Biscuit, about 4 per cent. carbohydrate; 13 per cent. nitrogen; 14 oz. equivalent to one ounce of white bread; made as follows:

"To one egg add one heaping saltspoonful of salt and beat; then add six tablespoonfuls of cold water and beat until quite thick, or until it becomes in quantity from 1 to 1½ pints, and into this beat one tablespoonful of thin cream; add two heaping tablespoonfuls of dry Barker's Gluten Food A (to be had of Herman B. Barker, Somerville, Mass.); stir this into the previous mixture; stir occasionally during one-half hour, until of the consistency of thick gruel; bake 35 minutes in well-buttered muffin pans in a hot oven." (Janeway.)

Casoid Biscuit (Thomas Leeming and Co., New York City), 8 per cent. carbohydrate; 10 per cent. nitrogen; 7 oz. equivalent to one ounce of white bread.

Pure Gluten Biscuit and Potato Gluten Biscuit (Battle Creek Sanitarium Food Co.), 10 per cent. carbohydrate; 13 per cent. nitrogen; 5½ oz. equivalent to one ounce of white bread.

No. 1 Protopuff (Health Food Co., New York), 10 per cent. carbohydrate; 12 per cent. nitrogen; 5½ oz. equivalent to one ounce of white bread.

Diabetic flours are Barker's Gluten Food A (not more than 4 per cent. carbohydrate and 87 per cent. protein; 500 grams=○=2200 calories); casoid flour, soja-bean meal (Thomas Metcalf Co., Boston, Mass.); Roborat (protein 84.5 per cent., fat 1.4 per cent.; 500 grams=○=2095 calories; imported by Lehn and Fink, 120 William Street, New York City); Hepco flour (soy bean); Lister's diabetic flour (casein.)

The above substitutes for bread, excepting bran biscuits, are expensive, and soon become distasteful. They are useful for a change.

Recipe for baked custard—

1 egg
3 tablespoonfuls cream
5 tablespoonfuls water
2 or 3 saccharine tablets
8 drops vanilla essence.

Beat up well. Bake in buttered dish twenty minutes, with a little nutmeg grated on top. (Janeway.)

Recipe for coffee ice cream—

3 tablespoonfuls cream
3 tablespoonfuls water
2 tablespoonfuls coffee with 2 or 3 saccharine tablets dissolved in it
1 egg.

Mix in saucepan and beat gradually until it thickens; then cool and freeze. (Janeway.)

Artificial, sugar-free milk—

To about a pint of water add 3 to 4 tablespoonfuls of cream, mix well, and allow to stand for 12 to

24 hours. Skim off the floating fat, pour in a glass, add the white of an egg and stir; then add water and flavor with a little salt and a trace of saccharin (Williamson.)

Gelatin sweetened with saccharin (*q.v.* in Part 11) and favored with lemon, rhubarb, cracked cocoa, or coffee, is a useful diabetic food.

For pruritus, says Futcher, "the best remedy is a solution of boric acid or of hyposulphite of soda, one ounce to the quart of water, applied as a lotion." Croftan says that sodium salicylate, gr. xxx, internally, several times a day, is "almost a specific." The genitals should be bathed after each urination.

As a more or less preventive measure, one should enjoin the restriction of starchy and saccharine foods, and of overeating in general, in families showing a marked predisposition to diabetes, for in these instances the pancreas may be inherently weak, but may continuously function well enough if not overtaxed. This advice is, of course, good for the conservation of other mechanisms besides the pancreatic.

(For the Lewis and Benedict blood-sugar test, obtain the Epstein instrument with instructions from Ernst Leitz, 30 East 18th Street, New York City.)

Diaphragmatic Neuralgia.—See Neuralgia.

Diarrhœa.—Gr. διὰ through + ῥέω to flow. A diarrhæa may be the expression of either a functional disturbance or of organic changes. The so-called functional diarrhœas, however, are often catarrhal.

A. Diarrhœa in Adults.—Etiology.—(1) Functional: Weather changes, either to cold or to hot; exposure to cold and wet; cold drinks; excessive drinking of water or other fluids; purgative drugs and certain other drugs in overdose; nervous influences, *e.g.*, fear, apprehension, nervousness, shock, neurasthenia, hysteria; hyperthyroidism; tabes dorsalis; gastric hyperacidity; gastric hypoacidity, anacidity, and achylia, with the entrance into the intestines of undigested proteins and microörganisms, and resulting putrefaction; pyloric incontinence; overeating, the undigested excess of food undergoing fermentation or putrefaction; excessive fermentation of carbohydrates (fermentative diarrhœa); excessive putrefaction of proteins (putrefactive diarrhœa); bulky foods containing much indigestible residue, such as raw fruits and vegetables; an excessively fatty diet, or fat intolerance; absence or diminution of the pancreatic secretion, causing a fatty diarrhœa; decomposing and poisonous foods, especially fish, shell-fish, milk, and cheese; reflex influences arising from the generative organs, nose, skin, enteroptosis, hernia; chronic passive congestion due to heart, liver, lung, or kidney disease; uræmia (irritation caused by ammonia arising from the urea which is vicariously excreted into the bowel); retrocedent gout; cachexia; cancer; anæmia; Addison's disease; Bright's disease; infectious diseases, viz., malaria, pneumonia, diphtheria, the exanthemata, tuberculosis, anthrax, erysipelas, septicopyemia, etc.

(2) Organic: Typhoid fever; dysentery, amœbic or bacillary; cholera; intestinal tuberculosis; intestinal anthrax; distomiasis; tropical sprue or psilosis; infectious diseases, *e.g.*, pneumonia, tuberculosis, septicopyemia, diphtheria, erysipelas, the exanthemata, etc.; intestinal ulceration, due to stercoral accumulations, tuberculosis (specific ulceration or not), syphilis (specific ulceration or not), gout, scurvy, leukæmia, Hodgkin's disease, cutaneous burns, arsenic, mercury, antimony, alcoholism, uræmia, cancer, amyloid disease, embolism and thrombosis (occurring in ulcerative endocarditis or septico-pyemia, chronic valvular disease, arteriosclerosis, local abscess, multiple neuritis, erysipelas), diphtheria, varioloid, leprosy, pellagra, typhoid fever, dysentery, anthrax, and chronic passive congestion due to heart, liver, lung, or kidney disease; amyloid disease of the intestines due to chronic suppuration, tuberculosis, syphilis, or cachexia; poisonous foods, such as toadstools and decomposing foods; mineral poisons, *e.g.*, arsenic, mercury, copper, lead, etc.; intestinal worms (see Worms); cancer of the stomach or bowels; gastritis; extensive cutaneous burns; peritonitis; intestinal obstruction; hernia; diverticulitis. (See Enteritis.)

(a) Treatment of Simple Acute Diarrhœa or Acute Intestinal Indigestion.—(Symptoms: diarrhœa, flatulence, meteorism, perhaps pain, perhaps nausea and vomiting.) Put the patient to bed, and clean out the digestive tract by means of castor oil, to which may be added, if there is much pain, laudanum or paregoric; or, instead of castor oil, prescribe calomel in a single dose or in divided doses, followed by a saline. While waiting for the purgative to act, a copious colonic irrigation is of service. (See Part 11 for drug formulæ, etc.)

For the relief of colic, other useful remedies besides opium are spirits of chloroform, spirits of ginger, compound tincture of cardamom, chlorodyne, and the following:

℞ Spiritus ammonii aromatici,
Spiritus chloroformi,
Syrupi zingiberis,
Tincturæ lavandulæ compositæ, aa ℥ss

M. Sig.—One or two teaspoonfuls in a cupful of hot water (diffusible stimulant).

℞ Tincturæ hyoscyami..... ℥ss (large dose)
Tincturæ belladonnæ..... ♏vi
Sodii bicarbonatis..... gr. xx
Tincturæ zingiberis..... ♏xv
Spiritus chloroformi..... ♏xx
Aquam menthæ piperitæ, ad.. ℥i

M. Sig.—One ounce t.i.d. (Mummery; for intestinal colic.)

Apply a hot water bag to the abdomen. Morphine may be required hypodermically.

Withdraw all food for twenty-four hours, then allow only small quantities of albumen water, barley water, sweetened arrowroot water, beef tea, or hot broth free from fat; no milk or carbonated beverages. Later, as the condition improves, add broths containing the yolk of an egg, meat juice, meat jellies, rice gruel, boiled milk, milk puddings, junket, zwieback or crackers, blueberry wine. Restrict the diet to liquids and soft foods for several days after the disturbance has been allayed. Forbid cold drinks, coarse vegetables such as cabbage and potatoes, legumes, cheese, goose, duck, salmon, animal fats, gravies, raw fruits, acids, cakes, coffee, etc.

Should the diarrhœa persist after thorough evacuation of the bowels, prescribe an astringent, such as bismuth in large doses, compound chalk powder, lead acetate, tincture of kino, compound tincture of catechu, tannigen, or tannalbin; with or without paregoric or laudanum.

℞ Bismuthi subnitratis..... ℥iv (℥ss–i per dose)
Mucilaginis acaciæ..... ℥ii
Aquæ, q.s., ad..... ℥iv

M. Sig.—Shake well, and take one to two tablespoonfuls every four hours.

(b) Treatment of Simple Chronic Diarrhœa or Chronic Intestinal Indigestion.—(Symptoms: diarrhœa, flatulence, meteorism, perhaps pain.) Ascertain and correct the cause. If an excessive, coarse vegetable and fruit diet is at fault, correct this. If the diarrhœa is due to excessive fermentation of carbohydrates, as shown by the acid, odorless character of the stools, after standing twenty-four hours, exclude starchy foods from the dietary for several weeks.

If the diarrhœa is due to the excessive putrefaction of proteins, as shown by the alkaline, ammoniacal, offensive character of the stools after standing twenty-four hours (the normal stool is almost neutral), exclude meat for a period continued at least two weeks after the diarrhœa has ceased, and give milk, butter milk, sour milk (koumyss or matzoon, see Part 11), vegetables and carbohydrates instead.

In achylia gastrica, give milk, sour milk, vegetables and carbohydrates, exclude meat and eggs, and prescribe dilute hydrochloric acid, 15 to 20 drops, well diluted in sweetened albumen water, during and for one-half to one hour after meals.

In nervous diarrhœa, prescribe sodium or potassium bromide, gr. v, or more, and tincture of belladonna, ♏v, more or less, half an hour before meals, with, in severe cases, a small dose of codeine. After the condition has been corrected, gradually withdraw these drugs. (A. F. Hertz.)

Hysterical diarrhœa is said to be extremely intractable, the rest cure and a change of scene being required.

In fatty diarrhœa, due to deficiency of the pancreatic secretion, try pancreatin, or pancreon.

A brief course of starvation of from five to six or more days, with or without the free drinking of purgative waters, may be of value in both gastric and intestinal disorders.

Ortner recommends menthol as the best intestinal antiseptic:

℞ Mentholis..... gr. iss–iiiss
Olei olivæ vel olei symgdalæ expressivæ..... ♏ivss

M. fiat caps. No. 1 Dent. tal. caps. molles No. 30.

Sig.—One capsule 3 to 5 times a day after meals. (If it is desired that the drug be liberated in the intestine, enclose it in glutoid capsules, grade II, gelatin capsules hardened with formalin.) (Ortner.)

B. Diarrhœa in Bottle-Fed Infants and in Early Childhood.—The affection may be simple intestinal indigestion, of the irritative, the fermentative, or the putrefactive type, or it may be an inflammatory or infectious diarrhœa, *i.e.*, an enterocolitis or dysentery; or it may be the grave fulminating choleraic diarrhœa or cholera infantum.

Prophylaxis.—Fresh air in abundance day and night, preferably in the country or in the city parks; very light clothing in warm weather, and a light flannel abdominal binder; frequent spongings on hot days, strict cleanliness; cleanliness of the mouth and hands, boiling of the nursing bottles and nipples, pasteurization or boiling of the milk, boiling of the drinking water, exclusion of flies; weaker milk diet and less frequent feeding, and an abundance of boiled water

in hot weather; breast feeding if possible (see Infant Feeding for details).

I. Simple Intestinal Indigestion or Dyspepsia.—The onset in simple dyspepsia is gradual, except when the disturbance is caused by a parenteral infection, such as a "cold," cystitis, otitis, etc., the weight becomes stationary or increases but slightly, or declines (normally there should be a gain of 6 to 8 oz. a week under six months of age, and 3 to 4 oz. a week thereafter). The stools are usually increased (more than 3 or 4 a day after the first month constitutes a diarrhœa), and usually show the presence of mucus, perhaps curds if raw milk is being given. The reaction is usually acid and the odor usually sour.

The physiology of digestion is briefly as follows: Protein is broken up in the intestine into amino-acids and ammonia, the amino-acids being absorbed as salts and the ammonia serving to render the intestinal contents alkaline. Fat in the intestine is split by the action of lipase into glycerine and a fatty acid. The fatty acids in an alkaline medium form soaps, which are emulsified by the action of the bile and then absorbed. The disaccharide sugars (lactose, saccharose, and maltose) are split in the intestine into the monosaccharides and are absorbed as such. An excess may be acted upon by bacteria and converted into formic, acetic, butyric, and other acids. Fat may also be thus acted upon.

High fermentable sugar (lactose and saccharose) feeding plus concentrated whey (salts) produces watery, greenish, sour-smelling, acid, mucous stools, associated with colic, vomiting, scalding of the buttocks, perhaps slight elevation of temperature, and malnutrition; in acute cases, high fever, apathy, prostration, air hunger, and rapid loss of weight (acid intoxication; cholera infantum), due to incomplete breaking down of the fats into acids which are absorbed through the weakened intestine. High sugar plus well diluted whey is better borne; and concentrated whey without carbohydrate is well borne. Fat in an acid intestine is converted into fatty acids, which cause additional irritation. Fat in an alkaline intestine (rendered alkaline by protein) favors constipation. High fat plus relatively low protein produces, in the order of their appearance, anorexia, lack of gain or loss in weight, sour regurgitation, acid vomiting (due to fatty acids) diarrhœa with soft curds and mucus in the stools, scalding of the buttocks, acidosis (*q.v.*) with rapid breathing, restlessness, cherry red lips, coma; in less severe, chronic cases, malnutrition and atrophy.

High fat and protein with insufficient carbohydrate feeding produces flabby, pasty, constipated, non-thriving babies. High fat plus high protein, low whey, and sufficient non-fermentable carbohydrate, *e.g.*, albumen milk (see under Diarrhœa in Bottle-Fed Infants), is well borne. The fat is thereby rendered harmless. High unboiled casein feeding causes vomiting of large curds, flatulence, colic, frequent alkaline putrefactive stools containing mucus and large tough curds, possibly fever and convulsions. High starch feeding produces emaciated, weak infants.

Etiology.—Other factors in the causation of dyspepsia besides improper feeding are heat, lack of fresh air, overclothing, insufficient clothing, uncleanliness, insufficient bathing, parenteral infection and nervous influences.

Treatment.—In acid, fermentative diarrhœa, reduce the fat and sugar, dilute the whey, and substitute for fermentable sugar non-fermentable carbohydrate. The middle-Western method of treatment is as follows: Allow only water or weak tea sweetened with a little saccharine for twelve to twenty-four hours. Then begin feeding with 1 part milk and 2 parts water (to dilute the whey) plus 1 or 2 per cent. nonfermentable carbohydrate, *e.g.*, dextri-maltose, boiled for one to three minutes. Give 6 to 10 oz. in twenty-four hours, divided into six bottles. Add about 3 oz to the total every day or every other day until a sufficient amount for the baby's age is reached (see Infant Feeding), then gradually increase the carbohydrate to 5 per cent., using the weight curve as a guide.

If the cause of the dyspepsia is a parenteral infection, etc., and the weight is rising or stationary, do not change the food; but if the weight is falling, treat as above.

In the presence of intoxication (cholera infantum), allow nothing but water or tea for twenty-four hours, excepting stimulants, *e.g.*, whiskey or brandy, 10 to 15 drops, well diluted, every few hours; or caffeine citrate, gr. ¼; or camphor in oil, 10 per cent., 10 to 15 mins. hypodermically; or adrenalin, 2 to 3 mins. hypodermically every two to three hours. The alkaline chalk mixture (*q.v.* in Part 11), several teaspoonfuls every few hours, may be of value. At the end of twenty-four hours, begin feeding with breast milk or albumen milk, 10 feedings of about ½ oz. each; the next day 10 feedings of ⅔ oz. each; the next day 10 feedings of 1⅓ or 1½ oz. each. Hold to the 10 x 1½ oz.

schedule until the weight curve becomes horizontal (do not change under any circumstances). Then gradually increase the daily total to about 3 oz. for every pound of the baby's weight. Then cautiously increase the carbohydrate to 5 per cent. After a few weeks return to the ordinary milk mixture (see Infant Feeding).

Albumen or Eiweiss milk may be made as follows: Mix together one quart each of buttermilk and water, boil three or four minutes, and allow to stand at least half an hour. Pour off the supernatant whey-water. Add to the casein sediment 4 oz. of boiled cream, 3 per cent. of dextrin-maltose (or Mellin's Food or Horlick's Malt Food) and sufficient whey-water to make one quart. Sweeten, if need be, with a little saccharine, 1 gr. to the quart (Langstein and Meyer). The composition is protein, 3.5; fat, 2.5; sugar, 1.5.

Instead of albumen milk one may use a mixture of high protein, low whey, and non-fermentable carbohydrate, and begin with small doses.

In the treatment of older children (one to three years of age) with acid intoxication, allow only water or tea the first day, then begin feeding tiny doses, gradually increased, of proteins, *e.g.*, egg, scraped meat, cottage cheese, and milk diluted one-third or one-half (or no milk), and non-fermentable carbohydrate, *e.g.*, zwieback, potato, cornstarch, arrowroot, Cream of Wheat, and salts in the form of vegetable purées.

Putrefactive diarrhœa, which is rare, is treated by the reduction of protein and the increase of carbohydrate, and, perhaps, the administration of lactic acid cultures (see Part 11) to inhibit putrefaction.

Dyspepsia caused by the ingestion of grossly indigestible articles, such as bananas, watermelon, cucumbers, etc., calls for purgation by means of castor oil, ʒi–ii to a baby of six months, ʒiii–iv to a child of three to five years; or calomel, gr. $\frac{1}{10}$, every fifteen to thirty minutes (gr. $\frac{1}{4}$ every fifteen to twenty minutes, up to 6 or 8 doses—Holt). While waiting for the purgative to act, the colon may be irrigated with a large quantity of water, which may be used cool where there is much fever. Food should be withheld for twenty-four hours, and feeding then cautiously resumed.

II. Infectious Diarrhœas.—In the infectious diarrhœas, as distinguished from the nutritional diarrhœas, the onset is sudden, with high temperature, vomiting, prostration, and frequent loose stools (alkaline in dysentery), containing mucus and blood or mucus and serum, with pus, and little or no solid material, and there is no response to twenty-four hours of starvation. In nutritional diarrhœa, the onset is usually gradual, following improper feeding, the stools are green, usually acid and watery, contain increased solid material and mucus, but rarely blood or pus, and there is a favorable response to twelve to twenty-four hours of starvation. To obtain the stool free from urine, insert into the rectum a narrow test-tube with a hole blown in the side.

The bacillus dysenteriæ is a common cause of infectious diarrhœa. The gas bacillus and streptococcus are occasional causes. Flies and dirt are important factors. Boiling the milk is preventive. To demonstrate the gas bacillus, inoculate a test-tube of milk with a pea-sized amount of stool, heat to 180° F. for half an hour, or boil for three minutes, to destroy all bacteria except spores, then incubate at body temperature for twenty-four hours. If the gas bacillus is present, the sugar of the milk will be split into acetic and butyric acids (smelling of rancid butter) which precipitates the casein, and the latter is shot full of holes by the gas formation. The microscope reveals the large Gram—positive gas bacillus.

Treatment.—Since the gas bacillus grows well in sugar, but not in protein or lactic acid, the treatment is buttermilk or lactic acid cultures or albumen milk (see under Diarrhœa in Bottle-Fed Infants). (Kendall.)

In dysenteric and streptococcus infection, on the other hand, no bacterial poison is produced in a carbohydrate medium, but is in a protein medium, so that a high carbohydrate diet is indicated. Employ breast feeding, if possible, otherwise the Frank artificial feeding, as follows: weak tea for twenty-four hours, except in cases of marasmus or decomposition; on the second day, five feedings, each of 2 oz. of whey plus 2 oz. of gruel, made of barley flour, rice flour, brown flour, cornstarch, arrowroot or farina (made by boiling one even tablespoonful of the flour in 12 oz. of water for twenty minutes; if the grains are used, 2 tablespoonfuls, with a pinch of salt, are boiled in one quart of water for six hours, the amount being kept up to one quart by the addition of water; after boiling strain through coarse muslin); the whey and gruel mixture to be gradually increased by the fourth or fifth day to five feedings of 2½ oz. each of whey and gruel; on the fifth to eighth day, gradual replacement of the whey by milk in teaspoonful doses; on the twelfth to fourteenth day, disregarding the stools, a diet consisting of a

LAROUSSE MÉDICAL

Quieting, emollient, and pectoral plants.

daily total of 13 to 14 oz. of gruel, 13 to 14 oz. of milk, and 6 to 7 oz. of broth.

For high fever, apply an ice-cap to the head, and employ tepid sponging, the cold pack, or perhaps better, the tub bath at a temperature of 100° F., gradually reduced by means of ice to 80° or 85° F., and continued for five to twenty minutes. Repeat the bath every two to four hours. If the skin is cold and the temperature subnormal, employ hot mustard baths or packs (1 to 2 tablespoonfuls of mustard to four gallons of water), until a cutaneous reaction is produced, and apply hot water bottles. To combat the associated prostration and feeble pulse, administer whiskey or brandy, together with tincture of strophanthus; or strychnine hypodermically; or digitalin; or camphorated oil or spirits (see Part 11). For persistent vomiting, wash out the stomach once with a warm one per cent. solution of sodium bicarbonate (see Inanition for technique); or, in older children, give a large quantity of boiled water to drink, which is usually soon vomited and thus washes out the stomach. Dennett gives sodium bicarbonate, 1 level teaspoonful in a glass of water—one tablespoonful every 15 to 30 minutes, up to 4 or 6 tablespoonfuls every hour. In severe vomiting, purging, and threatening collapse, give a hypodermic injection of morphine, gr. $\frac{1}{100}$ to $\frac{1}{80}$ to $\frac{1}{60}$, with atropine gr. $\frac{1}{600}$, to an infant of six months to one year. Do not give morphine, however, if there is stupor or coma, or if the stomach and bowels have not been thoroughly emptied by repeated vomiting and purging.

To replace great loss of fluid, administer water by mouth and normal saline solution by bowel or subcutaneously, at least one pint every twelve hours.

In cases in which, after the bowels have been thoroughly evacuated and the temperature is falling, the diarrhœa still continues and the stools are not foul, prescribe bismuth subnitrate, subcarbonate, or subgallate in big doses—gr. v–x (see Part 11) every hour until the stools are blackened. To hasten blackening of the stools, which is essential, lac sulphur may be added to the bismuth mixture in grain doses. Holt says subcarbonate of bismuth is the safest: gr. v–xv every two hours, to a child of one year:

℞ Bismuthi subcarbonatis..... gr. lxxx (gr. x per dose)
Sulphur is præcipitatis gr. viii (gr. i per dose)
Mucilaginis acaciæ.... ℥iii
Aquæ, q.s., ad..... ℥ii
M. Sig.—Shake well, and give two drams every two hours.

Other astringent preparations are prepared chalk, tannalbin, tannigen, quinine tannate (see Part 11). Deodorized tincture of opium, or Dover's powder, or paregoric, should only be employed to check frequent, excessive movements, and to relieve pain and tenesmus. Remember that elevation of temperature and foul stools call for purgation.

In cases in which a slight diarrhœa with much mucus persists (chronic ileocolitis), employ, once or twice daily, colonic irrigations of warm normal saline solution (℥i ad Oi); or fluid extract of hamamelis in warm normal salt solution, 1:65; or tannic acid, ℥i to the pint of hot water; or silver nitrate, 1:8000, followed by normal salt solution. For distressing tenesmus inject into the rectum two ounces of a thin starch solution containing laudanum. In chronic ileo-colitis in infants under one year, says Kerley, "breast milk is practically the only hope," with plain boiled water before each nursing.

See that the baby is not overclad, and has plenty of fresh air, preferably in the country or in the parks.

C. Diarrhœa in Breast-fed Infants (more than four stools a day, associated with vomiting, regurgitation, anorexia, flatulence, colic, stationary or falling weight, pallid inelastic skin, slight elevation of temperature, fretfulness.) — CAUSES. —Too frequent feeding; too long feeding or overfeeding (to ascertain which, weigh the baby before and after nursing); maternal illness, nervous strain, or the ingestion of certain articles of diet; maternal overfeeding producing an over-rich milk in fat or sugar; accessory feeding; enteric infection; parenteral infection ("cold," cystitis, otitis, etc.; of sudden onset and temporary); overclothing; overheating; overcooling; bad hygiene.

Treatment.—In alimentary cases discontinue the breast milk for twelve to twenty-four hours, and give plain unsweetened water or albumen water instead. Albumen water is made by adding the white of one egg to a pint of boiled water, with or without salt. It may be warmed slightly. To render the intestine alkaline, one may limit the nursing to, say, about five minutes, and give albumen milk (see Infant Feeding) without sugar. If it is suspected that the baby has received some food other than the breast, give a dose of castor oil.

Unless very much undernourished, the infant should be nursed every three hours—at 6, 9, and 12 A. M., 3, 6, and 9 P. M., and up to the fifth or sixth month, at 2 A. M.—seven or six nursings in twenty-four hours. Each nursing should be continued until the

baby is satisfied or goes to sleep, but no longer than twenty minutes.

Diarrhœa, Inflammatory.—(In Adults, see Enteritis.) (In Infancy and Early Childhood, see under Diarrhœa.)

Diathermy.—Gr. διά through + θερμαίνειν to heat. Diathermy means the destruction of tissue by means of the intense heat that is generated by a powerful high-frequency current (see Medical Electricity).

The current is produced by a motor, and is applied by means of two electrodes, a large one wrapped in wet towels, and laid upon the abdomen or chest, and a small one with a metal point, which is plunged into the tissue to be destroyed. The great heat produced at the small electrode, and the little heat produced at the large electrode is due to the respective size of the electrodes.

General anæsthesia is required.

The part to be treated is carefully wiped dry (atropine, see Part 11, may be given internally), the small needle electrode is buried completely in the tissues, and the current is turned on. As soon as the part turns white, or bubbles appear (five to ten seconds), the current is turned off, the needle removed, and another part punctured and treated in a similar manner until the whole is destroyed. But too much should not be destroyed at one sitting, for fear of the production of too large a slough, with resulting septic absorption.

Diathermy is employed in the removal of tumors, nævi, lupus, enlarged or septic tonsils, etc.

Dibothriocephalus Latus.—Gr. βοθρίον pit + κεφαλή head; L. *lat'us*, broad. (See Tapeworm Infection.)

Dietetics.—See Food Values.

Dietl's Crisis.—See Movable Kidney, under Enteroptosis.)

Dilatation of the Bronchi.—See Bronchiectasis.

Colon.—See Colon, Dilatation of the.

Heart.—See Cardiac Insufficiency or Failure.

Œsophagus.—See Œsophageal Dilatation.

Dilatation of the Stomach, Acute; Acute Gastrectasis.—Gr. γαστήρ stomach + ἔκτασις stretching. This is an important pathological condition to keep in mind, and is not very uncommon. It is characterized by an onset which is usually sudden and severe, resembling acute intestinal obstruction. There is acute abdominal pain and distention, copious vomiting of a bilious fluid, dyspnœa, great thirst, scanty urine, and collapse; no fever. An important diagnostic sign is the replacement of gastric tympany by dulness, the latter extending from below the navel on the left side to the right costal margin. Gastric lavage and the prone or knee-chest posture usually reduce the swelling and stop the vomiting. Unless properly treated, the condition is fatal. Properly treated it is usually cured within five days.

Etiology.—Paralysis of the gastric musculature secondary to a surgical operation, general anæsthesia, traumatism of any part of the body producing nervous shock, infectious diseases (typhoid fever, pneumonia), debility resulting from infectious diseases, anæmia, cachexia, heart disease, rickets, etc., gastric disease, compression exerted by a plaster jacket, spinal deformity, overeating causing sharp flexion of the pylorus, incarceration of a gall stone. The immediate cause is often a kinking or constriction of the duodenum due to traction on the mesenteric root caused by gravitation of the intestines into the pelvis, the patient lying upon his back.

Treatment.—Turn the patient face down, with the head low and the pelvis high, or get him in the knee-chest posture. Wash out the stomach thoroughly at once. Cohnheim leaves in a saline cathartic or elaterin, gr. ss, and gives a high enema of saturated magnesium sulphate solution, 4 to 6 ounces. Repeat the stomach lavage every two or three hours for three or four times, then every four to six hours.

Allow no food or drink by mouth.

For the thirst employ normal saline enemata (℥i ad Oi) or subcutaneous infusions. Administer stimulants as required, viz., camphorated oil, strychnine, or digitalin, hypodermically (see Drugs, Part 11.) Eserine, or pituitrin, may be given hypodermically for the purpose of stimulating the gastro-intestinal musculature. Atropine is recommended for the purpose of lessening pylorospasm and secretion (but is there any spasm present?).

If lavage and the knee-chest or prone posture are unsuccessful, do an exploratory operation. Look for intestinal obstruction and explore the duodenum for constriction. If the stomach alone is involved, do a gastrostomy or a gastrojejunostomy or the Finney gastroduodenostomy. If the duodenum is involved with the stomach do a duodenojejunostomy.

Dilatation of the Stomach, Chronic; Chronic Gastrectasis.—Chronic dilatation of the stomach is the result of pyloric obstruction. Says Cohnheim, " The assump-

tion of the existence of primary muscular weakness (or atony) of the stomach, as a cause of chronic dilatation, has now been quite generally abandoned.

Causes of Pyloric Obstruction.—Pylorospasm due to ulcer, to a neurosis, or to gallstones, or possibly to irritating ingesta, etc.; cicatrization of an ulcer; constricting or displacing adhesions due to cholelithiasis, appendicitis, or gastric ulcer; inflammatory swelling due to ulcer; benign pyloric hypertrophy; cancer of the pylorus; compression by an adjacent tumor, floating kidney or spleen; benign adenomata and polypi; foreign bodies; cicatricial narrowing caused by caustic alkalies, acids, and corrosives; kinking of the duodenum due to enteroptosis; epigastric traumatism giving rise to pyloric spasm or organic changes; epigastric hernia; congenital hypertrophic pyloric stenosis; congenital stricture.

The symptoms of pyloric obstruction vary all the way from no symptoms whatever, on through a variety of dyspeptic manifestations, such as sensations of fullness, flatulence, heartburn, colicky pains, palpitations, headache, dizziness, anæmia, depression, etc., to the symptoms of frank obstruction, viz., the copious periodic vomiting of sour-smelling food retained beyond the usual time, followed by relief of symptoms. Associated symptoms in advanced cases are thirst, dryness of the skin, oliguria, constipation, and perhaps emaciation, rarely tetany, which is a serious sign. "Gastrectasis due to spasm of the pylorus," says Cohnheim, "should always be thought of, if colicky pains occur regularly at certain periods of the day, especially four to six hours after meals, at five or six o'clock in the afternoon and from one to three o'clock at night."

The stomach is enlarged, as may be demonstrated by rapid inflation with a Davidson double-bulb syringe attached to a stomach-tube, or with carbonic acid gas, formed in the stomach by the administration of a small teaspoonful of tartaric acid dissolved in an ounce of water, followed by a rather larger quantity of sodium bicarbonate (Osler). The lower border of the normal stomach, under air inflation, rarely descends lower than the umbilicus, when the upper border is in its normal position. Look and feel for peristaltic waves and for the presence of a tumor.

A bismuth X-ray examination gives important information. Two to four ounces of bismuth sulphate suspended in mucilage of acacia or in milk is given on an empty stomach, say at 5 A. M., and six hours later the patient is radiographed in the upright position. The stomach should then be empty. If bismuth is still present, pyloric obstruction is indicated. A second bismuth meal is now given and frequent radiographs taken with the tube focussed upon the third lumbar vertebra, taking care to exert no pressure upon the stomach. (R. C. Cabot.)

The retention of food overnight indicates pyloric obstruction. "If the physician gives the test supper (at 8 P. M., porridge containing rice and raisins, and one or two slices of bread and butter), and finds the stomach empty in the morning before breakfast (12 hours later), gastrectasis may be eliminated from the diagnosis." (Cohnheim.)

"In benign stenosis of the pylorus, hydrochloric acid is always present; and in almost all cases, there are both hyperchlorhydria and hypersecretion; occasionally the gastric juice is normal or subacid." (Cohnheim.)

(See Dyspepsia, for gastric analysis and technique.)

Congenital hypertrophic stenosis of the pylorus is a very serious affection, with a mortality of about 50 per cent. (Holt), characterized by the appearance usually during the first month of life, of persistent bile-free projectile vomiting, gastric distension, visible peristalsis, a palpable, small olive-sized tumor, the absence of milky stools, usually constipation, no fever, and progressive emaciation due to starvation. Pylorospasm is an important factor in this affection.

Prognosis.—In non-malignant cases the prognosis under appropriate treatment, medical or surgical, as required, is usually good.

Treatment.—Where food remains in the stomach overnight, the stomach should be thoroughly washed each day at bedtime until the overnight retention ceases (see under Dypepsia for technique). If fermentation is present, employ lukewarm boric acid solution, a teaspoonful to the pint, or salicylic acid, 15 grains to the pint, or thymol, 4 grains to the pint. Sodium bicarbonate, a tablespoonful or more to the pint, is used to remove mucus. As soon as the fermentative processes have been checked, use only lukewarm water. The washing should be continued each time until the fluid returns clear. Lavage in the early morning may sometimes be advisable. Cohnheim follows lavage with the introduction into the stomach of 50 to 100 c.c. (or even 150 c.c.; 30 c.c. = 1 oz.) of warm olive oil, which may first be shaken with warm water in order to

remove any irritating fatty acids that may be present. Large doses of olive oil (50 c.c. or 1 ½ oz.) may be taken one-half hour before meals, t.i.d.

To prevent decomposition of the stomach contents, one may employ, if deemed advisable, creosote, ♏i, in a tablespoonful of water, t.i.d.; or thymol, gr. i in pill, 3 or 4 times a day; or chloroform water, one tablespoonful 3 or 4 times a day; or bismuth salicylate and magnesium carbonate, aa gr. v, in powder form, after meals; or sodium salicylate, gr. v, several times a day.

The diet should consist of soft or finely divided or well-masticated, easily digestible, concentrated, non-irritating food, leaving little residue, *e.g.*, panopepton, liquid peptonoids, somatose, Leube's beef solution, scraped beef, meat juices and jellies, thick meat soups, boiled tender meats (fish, chicken, etc.), eggs boiled three minutes, milk, cream, custards, junket, toasted bread, rusks, and the less coarse vegetables in purée form: potatoes, rice, grits, arrowroot, peas, carrots, asparagus tips, spinach, apple and orange sauces. Some interdict fats. Cohnheim says the diet "should be as rich in fats as possible," and records remarkable success with his lavage and oil treatment. Liquids should be restricted. Avoid tea, coffee, cocoa, alcohol, beans, whole potatoes, green and coarse vegetables, raw fruit, sweets, salads, spices, condiments, cheese, old butter, black bread, smoked meats.

Some advise four or five small meals a day, at least three hours apart, others (Hemmeter) allow but two meals, at 8 A. M. and 3 P. M. Rectal feeding, for the purpose of resting the stomach, may be advantageous in some cases.

Attend to the mouth and teeth. The latter should be cleansed with brush, warm water, and castile soap at least once a day, before breakfast. It is best for the patient to lie down for at least an hour after every meal.

For the consideration of hyperacidity, hypersecretion, and sub-acidity, see the proper caption. Employ saline enemata (℥i ad Oi) for the relief of great thirst.

Cases that do not respond, say in three or four weeks, to medical treatment, should be submitted to operation, viz., pyloroplasty (Finney's operation, etc.), gastroenterostomy, pylorectomy, gastroplication. The occurrence of tetany demands operative interference.

A. Bernheim has used fibrolysin (see Part 11) with success in the treatment of benign stenosis.

Treatment of Congenital Hypertrophic Stenosis of the Pylorus.—Allow the baby to nurse for only three to eight minutes at three to four hourly intervals (some feed small amounts every hour or two); or remove the milk with a breast-pump and feed no more than two ounces to a child of one month. With bottle-fed children it is advised that the fat be reduced. Twice daily, about 2 ½ hours after feeding, wash out the stomach with warm one per cent. sodium bicarbonate solution (about a teaspoonful to the pint). The lavage may have to be continued for several months. Wachenheim considers lavage irrational, but not with good reason. Hot applications to the epigastrium (also atropine, *q.v.*, and alkalies) may aid in relaxing spasm. See that the mother is not eating irritating foods, and that her bowels, etc., are functioning properly.

If the patient grows worse under several days of medical treatment, operate. Perform pylorodiosis (divulsion), pyloroplasty, gastroenterostomy, or perhaps best, merely splitting of the circular muscle fibres of the pylorus. Following the operation employ Murphy's drop method of proctoclysis, with the patient in a semi-erect posture. After twenty-four hours the patient may be very cautiously fed, beginning with breast milk, one part, and water, two parts, one teaspoonful every hour. The operative mortality is high, unless simple measures are employed.

Diphtheria.—Gr. *διφθερα* membrane. An acute endemic and epidemic contagious local mucous membrane infection with general toxæmia, caused by the Klebs-Löffler bacillus, and characterized by an incubation period of one to three to eight days, followed by the appearance in the throat of a dirty-white membrane which gradually extends from the tonsils to the uvula and soft and hard palate, and sometimes to the larynx. The disease may begin in the larynx with a brassy cough, dyspnœa, cyanosis, and rigidity of the sterno-cleido-mastoid muscles; or it may begin in the nose. The eye, middle ear, vulva, penis, skin, etc., may become infected. An erythematous rash sometimes occurs. The fever is usually low as compared with simple tonsillitis. Bronchopneumonia, nephritis, myocarditis, and cervical adenitis are common complications. Common sequelæ are, paralysis of the palatal muscles, manifested by nasal voice, regurgitation of food through the nose, inability to pronounce "wrong," or to blow out the cheeks, and immobility of the palate on one or both sides when the patient says "Ah"; paralysis of the muscles of the eye, both

intrinsic (ciliary: muscles of accommodation) and extrinsic; paralysis of the trapezii, causing the head to fall forward; and paralysis of the extremities, etc. Recovery from paralyses always occurs within a few months.

A positive diagnosis of diphtheria is made by the demonstration of the bacillus diphtheriæ in cultures obtained from the affected parts, the Schick reaction, of course, being positive. A portion of the exudate is removed on a sterile swab of cotton and spread over the surface of Löffler's blood serum and incubated at 37° C. for no longer than six to eight hours. The colonies found are then stained on cover-glass preparations in Löffler's alkaline methylene blue solution for one to five minutes, washed, dried, and examined with the oil-immersion lens.

If the Schick test is followed by no local reaction, the individual has not got diphtheria, even though diphtheria bacilli are present. The Schick test is performed as follows (Webster): Dilute the minimum fatal dose of diphtheria toxin for a guinea pig of 250 grams weight with sterile physiological salt solution (0. 9 per cent.) so that each c.c. of the dilution contains 0.2 of the minimum fatal dose. Prepare fresh; the toxin may be obtained from the health officers in the larger cities or from the larger laboratories handling biological products, *e.g.*, the H. K. Mulford Co., Philadelphia; keep in a cool place to prevent deterioration. Inject 0.1 c.c. ($\frac{1}{50}$ of the minimum fatal dose) with a 1 c.c. record tuberculin syringe intracutaneously into the outer side of the upper portion of the arm. Make a control injection into the other arm of 0.1 c.c. of the diluted toxin, heated to 75° C. to destroy the toxin but not the protein. A positive reaction is manifested by a gradually increasing redness and infiltration at the site of the white wheal originally produced, measuring about 1 to 2.5 cm. within twenty-four to forty-eight hours, which persists for several days, and gradually fades, leaving a brownish pigmentation and slight scaling. If the reaction is negative, the original wheal produced usually disappears within an hour. If a so-called pseudo reaction appears in both arms, differentiated by its earlier appearance and disappearance, less circumscription, and absence of subsequent pigmentation, it is merely an indication of an extreme sensitiveness of the skin. A negative reaction indicates the presence of diphtheria antitoxin in the blood, and consequently immunity against diphtheria; a positive reaction indicates the reverse. Therefore, protective immunization is required only for those showing a positive reaction. If there is a question of diagnosis between ordinary tonsilitis and diphtheria, a positive reaction would point to the latter, as patients with true diphtheria have little antitoxin in the blood. If a patient with tonsilitis shows diphtheria bacilli in cultures from the throat, and a negative reaction, he is merely a diphtheria carrier and not an actual diphtheritic.

Prognosis.—The prognosis should always be guarded.

Treatment.—Isolate the patient (see Disinfection), and put him to bed. Prescribe, in the acute stage, a nutritious liquid diet: milk, eggs, broths, meat juice well salted, meat jellies, rice, oatmeal and barley gruels, buttered toast, ice-cream, orange juice, and plenty of water. Give at the onset calomel in small repeated doses, followed by a saline (see Drugs, Part 11.)

Administer antitoxin at once; do not delay for even one day, for the later it is given, the less potent is its action. Inject the antitoxin aseptically (Kerley recommends the "Record" antitoxin syringe) into the cellular subcutaneous tissue, best in the back near the angle of the scapula. First cleanse the skin with alcohol or tincture of iodine, lift it with thumb and forefinger, and insert the needle quickly. Do not rub the part. Seal the puncture with a thin wisp of sterile absorbent cotton saturated with collodion. It may best be administered intramuscularly or intravenously.(q.v.)

Inject at least 4000 to 5000 units, or to those under one or two years of age, 1500 to 2000 units. If the membrane is very extensive, or there is laryngeal stenosis, inject 8000 to 12,000 to 15,000 to 30,000 units. A single large dose is preferable to repeated smaller doses. Repeat the initial dose every four to six hours until the membrane shrivels, the nasal discharge and fetor diminish, the fever subsides, and the general condition improves. The worse the case, the bigger the doses of antitoxin required, and the shorter the intervals of its administration; in other words, give enough antitoxin to neutralize the toxin. (McCollom.) Schick recommends 100 units of antitoxin per kilogram (2.2 pounds) of weight in ordinary cases, and 500 units per kilogram in severe cases. (For anaphylactic phenomena—"serum reaction"—see Anaphylactic Shock.) If there is reason to fear hypersusceptibility to horse serum, one may inject 0.1 c.c. of the serum and double the dose hourly until the full dose is given.

Other remedies of more or less value are

(1) corrosive sublimate, given cautiously in very small doses, and continued no longer, says Yeo, than three or four days; (2) daily inunctions of unguentum hydrargyri, gr. xv–xxx, or unguentum Credé, gr. xv–xlv; (3) tinctura ferri chloridi, ♏ii for a child of one year, in a teaspoonful of syrup and water (best flavored with orange or lemon) every hour; ♏v–x for a child of three years; ♏xii to the tablespoonful for children over ten years and for adults; and (4) fresh garlic juice (succus alii sativi), ʒi every four to six hours, or, for a child under twelve years, ʒss, best in syrup; a bulb may be held in the mouth and occasionally scored with the teeth; the fresh juice with an equal amount of water used as an antiseptic nose and throat wash (highly praised by Minchin).

If practicable, the affected parts should be very gently swabbed, sprayed, or irrigated every three hours with warm mild antiseptic preparations, *e.g.*, bichloride solution, 1:4000; boric acid solution, two teaspoonfuls to the pint; hydrogen peroxide, 3 per cent.; sodium bicarbonate, 2½ teaspoonfuls to the pint; or, perhaps best, normal saline solution, one teaspoonful of salt to the pint. In giving irrigations, use a fountain syringe, and place the child on its side with the head low.

℞ Mentholis..... 10.0 gm.
Toluol, ad..... 36.0 c.c.
Liquoris ferri sesquichlorati..... 4.0 c.c.
Alcoholis absoluti..... 60.0 c.c.
M. Sig.—Swab the throat very gently every two hours. (Löffler's solution.)

℞ Acidi carbolici..... gr. xiv
Alcoholis, 30%..... ʒi
M. Sig.—Swab the throat very gently every two hours.

℞ Tincturæ ferri chloridi..... ʒiss
Glycerini..... ʒi
Acidi carbolici..... ♏xv–xx
Aquæ..... ʒi
M. Sig.—Swab the throat very gently every two hours.

A formalin lozenge (gr. 1/8) may be sucked. The teeth and mouth should be kept clean.

For nasal discharge, swab the nose with absorbent cotton soaked in boric acid solution, and spray or irrigate with an alkaline antiseptic solution, viz.,

℞ Phenolis cryst..... gr. xxiv
Sodii boratis,
Sodii bicarbonatis, aa..... ʒii
Glycerini..... ʒss
Aquæ destillatæ, q.s., ad..... Oi
M. Sig.—Nasal antiseptic solution. (Dobell.)

or

℞ Extracti hamamelis,
Aquæ cinnamomi,
Hydrogeni peroxidi, aa
M. Sig.—Nasal antiseptic solution. (Kyle.)

Calomel may then be insufflated, if desired; or liquid albolene instilled. Inhalations of medicated steam are deemed useful for the purpose of loosening the membrane, especially in laryngeal diphtheria:

℞ Olei eucalypti,
Alcoholis, aa
M. Sig.—Add 20 or 30 drops to the pint of steaming water.

℞ Olei eucalypti..... ʒi
Acidi carbolici liquidi..... ʒi
Olei terebinthinæ..... ʒviii
M. Sig.—Add one ounce to the pint of steaming water. (McCollom.)

Do not continue the steam inhalations any longer than about thirty minutes at a time, because of their debilitating effect. Every ten minutes the inhalation should be interrupted and the lungs filled with fresh air. St. Clair Thompson does not advocate steam inhalations.

For very septic putrid throats Thompson recommends the following acid chlorate of potash solution, which contains free chlorine: To nine grains of powdered chlorate of potash add five minims of pure hydrochloric acid; then add gradually one ounce of water and shake; add to this an equal amount of hot water. Syringe the throat every two to four hours.

Ice may be sucked and ice-bags applied to the neck.

For ophthalmia, instil atropine, gr. i–ii to the ounce, t.i.d., and irrigate the conjunctival sac every two hours with a warm solution of boric acid 2 to 4 per cent. Every eight hours introduce, by means of a wooden toothpick, ung. hydrargyri iodidi rubri, gr. i ad ʒi. Protect the sound eye with a watch glass. In otitis media (*q.v.* in Ear Diseases, Part 7), perform paracentesis of the drum membrane at the first sign of bulging. Mastoiditis rarely occurs.

Should swallowing become difficult, feed the patient through the stomach tube in order to avoid aspiration pneumonia.

Myocarditis is a complication greatly to be feared. Should the pulse become feeble, or embrocardia, gallop rhythm, or arrythmia occur, keep the patient very quiet, using morphine if necessary, employ the bedpan, and do not allow him even to feed himself. Some advise and some condemn the administration of brandy or whiskey in

liberal doses together with strychnine (see Part 11). Kerley gives, under three years, tr. strophanthi, gtt. i–ii, with codeine, gr. $\frac{1}{15}$ to $\frac{1}{10}$, every two hours; over three years, tr. strophanthi, gtt. iss–iii, with codeine, gr. $\frac{1}{10}$ to $\frac{1}{6}$ every two hours. Normal saline infusions (0. 9 per cent.) may also be given to restore tension; but the physician must use discretion and common sense in the treatment of such cases. Rest is the most important remedial agent.

The occurrence of urgent laryngeal dyspnœa demands the performance of intubation or tracheotomy the former to be ordinarily preferred.

Intubation is performed as follows: The child may either be held upright with its legs between the knees of the nurse, or it may be placed on its back on a table. The head is steadied by an assistant and the arms pinioned to the sides by a sheet. Having selected a tube of O'Dwyer's Intubation Set suitable for the age of the patient, attach it to the introductor. Insert the gag into the left angle of the mouth and open it widely. Pass the left index finger in back of the epiglottis and draw the latter forward, at the same time passing the tube, which has first been lubricated with glycerine or mentholized oil (gr. v ad ʒi of liquid albolene), along the palmar surface of the finger as a guide into the larynx, at the same time giving the handle of the introductor an abrupt turn upward. Then push the tube home with the finger and withdraw the introductor. Hold the tube in place with the finger for a few seconds until sure that it is in the larynx, as evidenced by the hissing breathing sounds, severe coughing, and relief of dyspnœa, then cut and remove the silk thread. Some leave the thread in and strap it to the cheek. In introducing the tube be quick and gentle and keep in the median line. Several short attempts are better than one prolonged effort. The physician should always be within call while the tube is being worn. Sometimes it is necessary to feed the patient through the stomach tube following intubation, unless the plan of Casselbury, of feeding with the patient on his back and the head lowered so as to bring the pharynx lower than the larynx, is successful. Atropine (see Part 11) is recommended when mucus accumulates in the intubation tube, but it should not be repeated "until the effect of the first dose has passed away." If the presence of the tube causes a persistent cough, give sodium bromide, to a child of four years, gr. iv, every half hour for two or three hours. (Kerley.)

The intubation tube should be removed at the end of three or four days, and not reinserted unless necessary.

Extubation is more difficult than intubation. It is accomplished by a reverse of the movement in intubation. The French "enucleate" the tube by extending the head with the left hand and placing the fingers of the right hand over the larynx beneath the tube, then suddenly pushing the head forward and at the same time pressing upward upon the intubation tube. Food should not be given for two hours before performing extubation to avoid vomiting and the aspiration of food particles.

In rare cases the tube cannot be discarded, because of the occurrence of dangerous dyspnœa on its removal. In such instances tubes of progressively increasing calibre should be inserted every few weeks; but, says Holt, "not until long after all acute symptoms have subsided." Holt says, "True cicatricial stenosis may best be relieved by opening the trachea and dilating from below, and afterward inserting an intubation tube."

If intubation is impracticable or unsuccessful, tracheotomy is required. Indeed, tracheotomy instruments should be on hand while attempting intubation. They are: a scalpel, probe-pointed bistoury for enlarging the tracheal wound, small-toothed dissecting forceps, hæmostatic forceps, retractors, a sharp hook, horsehair or silkworm-gut sutures, tape, Trousseau's dilator with three blades, and the tracheotomy tube.

Tracheotomy is performed as follows: Under very light general or local anæsthesia, or, in urgent cases, under no anæsthesia at all, and with the neck over-extended, the chin exactly in the midline of the body, and the left thumb and third finger grasping and steadying the larynx, make an incision about two inches long exactly in the midline, from the crico-thyroid membrane to below the level of the thyroid isthmus, cutting through skin, platysma, superficial fascia, intermuscular line, and deep fascia. Expose the trachea by retracting the tissues, and secure all bleeding vessels. Raise and steady the trachea by means of a sharp hook inserted in the midline under the cricoid cartilage or between the first and second tracheal rings. Then incise two or three rings from below upwards. Seize the right edge of the wound with small-toothed dissecting forceps, introduce Trousseau's dilator, open the blades, and insert the cannula. Reduce the size of the skin wound by horsehair or silkworm-gut sutures, and fasten the

cannula to the neck with tapes. Dress the wound under the collar of the tube with sterile gauze and place moist gauze over the tube. Remove and cleanse the inner tube every two or three hours. The tracheotomy tube should be removed at the end of three or four days, and not reinserted unless necessary. J. Biernacki says the patient must be fed nasally with peptonized milk (see Part 11) for at least two weeks.

During convalescence from diphtheria, watch the heart carefully and keep the patient quiet for several weeks. For post-diphtheritic paralysis, confine the patient to bed on a nutritious diet, and administer strychnine, iron, and codliver oil and also antitoxin, 3000 units daily, less for young children. Employ also massage and faradism. Gavage may be required in paralysis of the pharynx. The paralysis tends to disappear spontaneously in four to eight weeks.

Attendants upon diphtheria patients may protect themselves by tying a chloroform mask over the nose and mouth while treating the patients. The immunizing dose of antitoxin is 500 units for infants and 1500 to 2000 units for children over two years. Kerley says at least 1000 units regardless of the age of the child. Immunity lasts about three weeks. Then toxin-antitoxin may be given, adult dose: 1c.c. of a mixture containing 85 per cent. of the L + dose of toxin to each unit of antitoxin, a weekly subcutaneous injection for three doses; smaller doses in cases in which both the Schick and control tests are positive. Toxin-antitoxin does not begin to confer immunity for three or four weeks; but immunity persists for at least five years in 85 to 90 per cent. of positive Schick subjects, excepting infants under six months of age (Schroeder). Most children under five give a positive Schick reaction and show no marked reaction from toxin-antitoxin, but quite severe reactions often occur in those over five (Zingher).

The patient should not be released from quarantine until two or four bacterial examinations of the fauces, made on consecutive or alternate days have proved negative. The cultures are not to be begun until "seven days after the disappearance of the membrane and the cessation of the discharge from the nose" (McCollom). Bacilli may, however, be harbored indefinitely in the depths of the tonsils. The latter should, of course, be removed in such cases.

Diplegia.—Gr. δί; twice + πληγή stroke. Diplegia denotes the paralysis of both arm and leg; paraplegia, paralysis of the legs alone. (See Spastic Paralysis, and Brain and Cord Localization.)

Diplopia.—Gr. διπλόος double + ὄψις vision. See Motor Nerves of the Eyeball, and also Eye Diseases, Part 6.

Dipsomania.—Gr. δίψα thirst + μανία madness. Uncontrollable desire for alcohol. (See Alcoholism.)

Disinfection.—L. *dis-* apart + *infi'cere*, to corrupt. Patients suffering with communicable infectious diseases should be isolated. The sickroom should be screened against flies. It may be screened from the rest of the house by means of a sheet, wet with carbolic solution 1:20. No dry sweeping should be permitted. The broom should be covered with a cloth wet with carbolic solution, 1:20. A mackintosh should be placed under the sheet and pillows to protect the mattress.

Stools and vomitus may be disinfected by breaking them up in carbolic acid solution, 1:20, thrice the volume of the stool, or lysol, 5 per cent., twice the volume of the stool, and allowing it to stand at least two hours before emptying. Urine may be disinfected by emptying it in a vessel containing 200 c.c. of bichloride solution, 1:1000, or three litres of carbolic solution 1:20, or 5 per cent. lysol, 1.5 litres. Three litres of urine are thereby sterilized in two hours. Empty the vessel each day. Keep the urinal and bed-pan in a similar solution. In typhoid fever these measures should be continued for at least three weeks after the bacilli have disappeared from the urine.

Soak infected bed linen in bichloride solution 1:1000, or lysol, 3 per cent., for two hours, before sending it out to be boiled (for one-half hour).

Disinfect dishes by boiling, sputum by burning; bath water by the addition of chloride of lime, one-half pound to the 50-gallon bath, allowed to stand one hour.

After each stool and urination, cleanse the parts with bichloride solution 1:1000 and dust with powder. Wipe away nasal and buccal discharges with a piece of cloth which should be burned.

The mouth (tongue, cheeks, teeth and gums) may be swabbed every four hours with a mixture of glycerine, ℥iv, boric acid, ℥i, carbolic acid, ♏xx, and water to ℥iv; or with glycerine and peppermint water, of each ℥i, with the juice of a lemon added. Use for cleansing purposes a cotton stick or cotton or gauze sponge held by hæmostatic forceps. Anoint dry lips with vaseline or cocoa butter.

The nurse should wear a rubber apron, which should be washed frequently with bichloride solution 1:1000; and she should cleanse her hands in this solution, or in 5 per cent. lysol, after handling the patient. Keep the thermometer in 70 per cent. alcohol.

The doctor should don a gown before entering the sickroom.

If the skin desquamates, as in scarlet fever, anoint it lightly with a bland oil, such as sweet oil, cold cream, lanolin softened with oil and perfumed, or cocoa butter, to prevent the dissemination of infectious scales.

Attendants upon diphtheria patients may protect themselves by tying a chloroform mask over the mouth and nose while treating the patient.

Before releasing the patient from quarantine, he should be bathed and shampooed and dressed in clean clothes.

Dead bodies should be wrapped in cloths soaked with cresol water.

At the termination of quarantine, seal all windows and door cracks by means of strips of newspaper pasted on with flour and water, spread or suspend clothing about so as to expose all surfaces to the disinfecting fumes (formaldehyde gas is but a surface disinfectant), then place on the floor, in the centre of the room, a wide bowl, such as a large wash bowl, and within this a second smaller bowl containing commercial potassium permanganate, 6½ ounces for 500 cubic feet of air space. Pour over the permenganate commercial formalin (40 per cent.) one pint for 500 cubic feet of air space. Then leave the room at once and seal the door and keyhole.

After from twelve to twenty-four hours open wide all windows, and when the room can be entered, wash the walls with damp bread and other parts with bichloride 1:1000, or washing soda, 1 pound to 3 gallons of hot water, or carbolic solution, 1:20. It is best to repaint and repaper the sickroom.

S. G. Dixon recommends the following for fumigating purposes:

Sodium dichromate	10 oz.
Formaldehyde saturated solution	1 pt.
Sulphuric acid, commercial	1½ fl. oz.

Mix the formalin and sylphuric acid, and after cooling add to the bichromate in a vessel of ten times the capacity of the volume of ingredients used.

If it is desirable to destroy insects, sulphur should be burned in each room, 3 to 5 pounds to each 1000 cubic feet of air space (all surfaces and articles should be wet, if disinfection is aimed at). To destroy mosquitoes, use 2 pounds per 1000 cubic feet; or pyrethrum at least one quarter pound per 1000 cubic feet.

Dislocations.—See Orthopædics, Part 10.

Disseminated Sclerosis.—See Multiple Sclerosis.

Distomiasis or Distomatosis; Trematode or Fluke (Flat-worm) Infections.—Gr. δις two + στόμα mouth; τρηματώδης pierced.

I. Pulmonary Distomiasis.—A mild chronic Oriental disease of the lungs simulating phthisis, caused by the Distoma Westermanii, rarely by the giant liver fluke, and characterized by a chronic cough, occasional hæmoptysis, and the presence of the oval ova in the sputum. The brain (with resulting epilepsy), liver, eyelid, etc., may become secondarily infected.

Treatment.—Remove the patient to an uninfected district, with the hope that the worm may die and be coughed up or assimilated. The sputum should be destroyed. Preventive measures are the destruction of infected cats, dogs, and swine, and the boiling, cooking and thorough cleansing of the drinking water and foods, especially crabs. The embryo lives in fresh water, and the encysted cercariæ in molluscs and crabs.

II. Hepatic Distomiasis.—A chronic disease of the liver occurring in the Orient, in Prussia and Siberia, and occasionally in other countries, caused by at least two species of fluke-worm, and characterized by an enlarged tender liver, an intermittent diarrhœa, with the presence of the oval eggs in the fæces, and, after several years, hepatic cirrhosis with ascites and anasarca. The worms live in the portal and mesenteric veins, or in the bile ducts and gall-bladder. They sometimes invade the spleen and intestine. The disease is eventually fatal.

Treatment.—Remove the patient to an uninfected district, and prescribe male fern (see Part 11). Destroy the stools by heat or drying. The fluke usually dies and is discharged within a year. Preventive measures are the thorough cleansing, boiling or cooking of the drinking water and food, and the wearing of leggings to guard against possible infection through the skin from manure, particularly sheep's dung. The ova develop in the bodies of small molluscs, usually gasteropods, into a swimming form which lives in fresh water. The fish is an intermediate host.

III. Intestinal Distomiasis.—This affection occurs in Asia and Africa, and is characterized by a chronic diarrhœa, with perhaps blood in the stools, and the presence in the stools of the oval eggs.

Treatment.—The same as described above. Try thymol (see Ankylostomiasis), calomel, eucalyptus, or male fern (see Part 11).

IV. Hæmic or Venal Distomiasis; Blood-Fluke Disease; Bilharziasis.—A common chronic disease, chiefly of tropical and subtropical countries, caused by the distomum or schistosomum (Gr. σχιστ'ς cleft + σῶμα body) hæmotobium, which, starting from the portal vein and its radicles, migrates to the veins of the bladder and rectum, where the

female, carried by the male (see Fig. 34), deposits her eggs in the tissues. The eggs eventually appear in the urine and fæces.

In vesical bilharziasis there occur hæmaturia, irremediable chronic cystitis, and perhaps urinary fistulæ and vaginal tumors; commonly renal and vesical calculi.

Fig. 34.—Distomum hæmatobium: male carrying female (Emerson).

In rectal bilharziasis there occur a bloody discharge, straining and tenesmus, prolapse and perhaps papillilform growths and a chronic ulcerative proctitis.

There is an intestinal hæmic distomiasis occurring in China, Japan, and the Philippines (Katayama disease), due to a different fluke-worm, the schistosoma japonicum vel cattoi, and characterized by hepatic cirrhosis, splenomegaly, ascites, dysentery, and progressive anæmia, sometimes focalized epilepsy.

Treatment.—The treatment is symptomatic. Have the patient drink freely of boiled water, and avoid ingesta that irritate the urinary tract, *e.g.*, alcohol, spices, condiments, salted and preserved foods, red meats, cheese, radishes, asparagus, tea, coffee lemons, and tobacco; as enjoined under Cystitis (Part 3) and Pyelitis. Urotropin (see Part 11) may be of service. Calculi may require a removal. Local treatment of the bladder is not recommended. In retention of urine due to the filling of the bladder with blood-clots, do a perineal section, break up the clots with the fingers, and wash them out. If the bleeding continues, wash the bladder with hot creolin solution, 1:1000 to 500, or hot silver nitrate solution, 1:1000 to 500. A double tube may be kept in for about ten days (see Part 3). Excise urethral fistulæ freely, scrape perineal fistula with a sharp spoon and pack with gauze so as to keep the wound open to granulate.

Rectal or vaginal tumors should be removed. Copper sulphate solution, 1:1000, and iodoform or ichthyol suppositories are of service in rectal cases. For the relief of tenesmus and frequent mucous passages, inject about two ounces of a thin solution of starch containing ten to twenty drops of laudanum. The stools should be destroyed by heat or drying.

It is said that spontaneous cure often occurs.

Preventive measures embrace the boiling of the drinking water, thorough cleansing of foods, and the avoidance of infection through the skin, contracted by bathing in infected water.

Recently cures of Bilharziasis have been reported from the intravenous administration of tartar emetic. Taylor dissolves gr. i in 6 c.c. of freshly distilled sterile water and sterilizes the solution by autoclaving for one hour. Innes dissolves gr. ss. in 2 c.c. of normal salt solution. Taylor gives 2 grs. every two days, working up to 3 grs. twice a week. Innes gives 5 grs. in the first three or four injections, and works up to 15 grs. A 10 c.c. glass syringe is used and the injections given slowly (see Intravenous Medication). Cough, vomiting, or vertigo may occur. The treatment should be continued until the urine is free from ova.

Diver's Paralysis.—See Caisson Disease.

Diverticula of the Œsophagus.—See Œsophageal Diverticula.

Diverticulitis.—L. *diverticula're* to turn aside. Diverticula of the intestine are either congenital or acquired. Acquired diverticula occur in almost any part of the intestinal tract, and are due to constipation, ulceration (see Intestinal Ulcers), coprolighs, foreign bodies, torsion, trauma. Sigmoid diverticulitis is commonest. It is probably the result of chronic constipation. The acute form of the affection simulates left-sided appendicitis, adnexal disease in the female, and intestinal obstruction; the chronic form simulates cancer (X-ray shows filling defect in cancer), chronic sigmoiditis, tuberculous peritonitis, actinomycosis.

Possible complications and sequelæ are abscess, gangrene, perforation, peritonitis, intestinal obstruction, vesico-colic fistula, metastatic abscesses, cicatricial stenosis of the bowel, and cancer.

Treatment.—The treatment of acute diverticulitis is (a) in early mild cases, the use of laxative and enemas; (b) in intractable cases, resection of the diseased portion of the bowel or extraperitoneal drainage, or intra-abdominal gauze packing for forty-eight to seventy-two hours, or until firm adhesions have formed about the gauze, then removal of the gauze, incision of the abscess, and drainage.

Chronic diverticulitis calls for resection or short-circuiting.

Diverticulum of the Œsophagus.—See Œsophageal Diverticula.

Dizziness.—See Vertigo.

Dorsodynia. L. *do'rsum*, back+Gr. *ὀδυν'η* pain. See Myalgia.

Double Vision.—See Motor Nerves of the Eyeball, and also Eye Diseases, under Part 6.

Dracontiasis.—See Skin Diseases, Part 5.

Dropsy.—L. *hyd'rops*, from Gr. *ὕδωρ* water. See Œdema,.

Drowning.—See Asphyxia.

Dry Mouth.—See Aptyalism.

Dum-Dum Fever.—See Kala-Azar.

Duodenal Ulcer.—See Gastric and Duodenal Ulcer.

Duodenitis.—See Gastric and Duodenal Ulcer, and Jaundice, Catarrhal.

Dysarthria.—Gr. *δυs-* difficult + *ἄρθρον* joint. See under Aphasia.

Dysentery.—L. *dysenter'ia*, from Gr. *δυs* —ill + *ἔντερον* intestine. The term dysentery signifies a colitis or entero-colitis associated with abdominal pain, perhaps tenesmus, and frequent scanty stools consisting largely of mucus and blood. The presence of tenesmus indicates involvement of the sigmoid or rectum.

Four varieties of dysentery may be conveniently distinguished, namely:

1. Colitis or enterocolitis caused by improper food, great heat, chilling, metallic poisons, mushrooms, uræmia, plant poisoning, etc. See Enteritis.

2. Bacillary dysentery, caused by various types of the bacillus dysenteriæ, and possibly the bacillus pyocyaneus, paratyphoid bacillus, and other bacteria. See Dysentery, Bacillary.

3. Protozoal Dysentery, caused by the amœba hystolitica (see Dysentery,Amœbic), and balantidium coli, Kalazoa of India, and the malarial protozoön (pernicious malaria).

4. Colitis and enterocolitis caused by worms, *e.g.*, flukes, nematodes, etc. See Worms.

Other causes of tenesmus with bloody, mucous stools are rectal polypi, hemorrhoids, neoplasms, uterine retroflexion, retro-uterine phlegmon, cystitis.

Dysentery, Amœbic.—Gr. *ἀμοιβή* change. An acute or chronic ulcerative œdematous colitis, occurring endemically in tropical and subtropical countries, and sporadically in temperate countries, and caused by the amœba or entamœba, dysenteriæ (amœba histolytica), which enters the body in the cystic state in drinking water, and uncooked vegetables and fruits. Active amœbæ are destroyed by the acid gastric juice; the cysts are not.

The characteristic symptoms are abdominal pain, diarrhœa, which is usually intermittent, mucus and sometimes blood in the stools, loss of weight and strength, and anæmia. The symptoms may be acute or chronic. In mild cases there may be only lassitude, dyspepsia, abdominal discomfort, perhaps constipation, or perhaps an occasional diarrhœa.

Abscess of the liver is prone to occur, and it may perforate into neighboring parts, such as the lung, in which event there is coughed up a sputum resembling anchovy sauce and containing amœbæ and liver cells.

The disease is diagnosed by the discovery of motile amœbæ in the stools. The latter should be passed into a warm vessel following the administration of magnesium sulphate. They should be examined while still warm, on a warm slide, with a high power dry lens. Select a bit of blood-stained mucus for examination, mixing it with a drop of water. A small drop of aqueous methylene blue solution, 1 per cent., applied to the edge of the cover-glass, colors all elements excepting the amœbæ until the latter are killed. Motile amœbæ are found only during a diarrhœal crisis, but cysts may be found at any time. The amœba dysenteriæ is actively motile, its nucleus is not visible when the amœba is active, endoplasm and ectoplasm are well marked, and red blood-cells are enclosed. The nonpathogenic amœba coli is sluggish, the nucleus is visible, endoplasm and ectoplasm are poorly differentiated, and there are no enclosed red corpuscles. Cysts of the dysenteric amœba are 10 to 14 microns in diameter at the most, and contain 1 to 4 nuclei, no more. Cysts of the nonpathogenic amœba are 16 to 25 microns and contain 1 to 8 nuclei.

Prognosis.—Many cases are cured, especially in children, some even recovering spontaneously; but when untreated the disease is usually very serious. In rare cases a chronic colitis remains after the amœbæ have been eradicated.

Treatment.—Put the patient to bed on a very restricted diet consisting of milk diluted with lime water, diluted buttermilk, whey, albumen water, broths, and rice, barley, or oatmeal water. Peptonize (see Part 11) or boil the milk if curds appear in the stools. The food should be neither hot nor cold, so as not to excite peristalsis. Soft foods—gruels, potato purée, eggs, custards, minced fish or chicken, etc., may be added as the intestinal symptoms subside. Solid food should be withheld until the patient is well. Keep the abdomen warm by means of a flannel binder. Disinfect the stools by

breaking them up in a solution of carbolic acid, 1:20, thrice the volume of the stool, and allow this mixture to stand at least two hours before emptying.

Purge the patient at the start with castor oil, calomel or magnesium sulphate, 1 oz. (see Part 11). Then give each night at bedtime, at least three hours, better six, after eating or drinking, at first 60 to 90 grains of ipecac (the powdered Brazilian root is best, being richest in emetine), in pill form, thickly coated with salol, or in keratin capsules, to avoid dissolution in the stomach. To prevent vomiting the patient must lie motionless; laudanum is perhaps necessary, ♏x–xv, thirty minutes before the ipecac. The dose is reduced by 5 grains each night until a dose of 10 grains is reached. The latter may be continued for two weeks, or the first course may be repeated after the expiration of a week, if amœbæ are still present in the stools. (Rogers.)

Emetine hydrochloride is to be preferred to ipecac. It may be administered by mouth in keratin-coated capsules, with a bowl of milk or gruel, on an empty stomach; or it may be administered hypodermically. Give gr. iss–ii on alternate days for five doses, followed by three or four weeks rest, and a repetition of the course, if necessary. R. Lyons advises at least three courses. The dose for children of two years is gr. $\frac{1}{6}$ every twelve hours for 3 doses; under one year, gr. $\frac{1}{8}$ for 2 or 3 doses. (Martin.)

Emetine hydrochloride acts upon amœbæ in the tissues, but not within the lumen of the bowel, so that, while administering the hydrochloride hypodermically, emetine bismuth iodide should be given by mouth, gr. iii, in salol-coated pills, or, perhaps better, in powder in cachets, nightly for twelve nights. (Vincent and Muratet.)

The combined administration of emetine and salvarsan is recommended.

Owing to the long incubation period, averaging sixty-four days, a permanent cure is not certain until this period has elapsed without recurrence.

In suspected hepatitis (enlargement and tenderness of the liver, intermittent fever, leucocytosis), administer ipecac, gr. xxx, daily, or emetine, gr. ss–i daily, the latter hypodermically, and continue the drug for perhaps two weeks after the temperature has returned to normal (Rogers).

If, however, the liver abscess does not promptly subside, it should be opened and drained, and the cavity irrigated frequently with quinine solution, 1:1000.

Should the lung become perforated, and the liver abscess discharge freely through this channel, one may try postural drainage by having the patient hang head downward over a table, five or six times a day, and cough and compress the chest. If such treatment is ineffectual, rib resection is required.

For abdominal pain, apply hot turpentine stupes (flannel wrung out of steaming hot water containing a teaspoonful of turpentine to the quart, and covered with dry flannel; these alternating with plain hot stupes); give morphine, or opium if the pain is severe.

For vomiting, see Vomiting.

For hemorrhage, employ morphine and the abdominal ice-bag, and raise the foot of the bed; allow nothing by mouth excepting ice to suck, for eight to twenty-four hours.

For tenesmus, inject into the rectum one or two ounces of thin starch solution containing 10 to 20 drops of laudanum, followed, if desired, by the application of silver nitrate solution to the rectal ulcers through a speculum (see under Enteritis, Chronic for technique).

In the chronic stage of the disease (contraindicated during acute symptoms), employ large colonic injections (two litres) of quinine sulphate or neutral quinine hydrochloride solution, 1 : 5000, increased gradually, in the course of a few days, to 1 : 500 (for children, 1 : 10,000). Give the injections once or twice daily through a three to four foot colon tube smeared with vaseline. Have the hips and the foot of the bed elevated, and allow the fluid to enter slowly. The patient should try to retain the solution for fifteen to twenty minutes at the same time rolling his abdomen about so as to bring the fluid into all parts of the colon. The injections cause pain, and sometimes vomiting. An occasional injection of silver nitrate, 1:2000, increased to 1:500, washed out with saline solution, may be of benefit; also argyrol, 1:1000, and copper sulphate, 1 : 10,000; and Labarraque's solution, 1 : 100 (see Part 11). If the rectum is very irritable, it may be necessary to insert a cocaine (gr. i), or morphine (gr. $\frac{1}{4}$) suppository one-half hour before introducing the colon tube.

An occasional dose of castor oil or salts should be given; indeed, it is stated that the daily administration of magnesium sulphate, ℥i, is an effectual mode of treatment.

Irrigation of the large bowel through a cæcal or appendicular fistula is a valuable mode of treatment.

Too prolonged local treatment (continued for several months) should be avoided, for it may produce a permanent catarrhal colitis.

Bolus alba or kaolin (see Cholera Asiatica and Part 11) has recently come to the front as a promising remedy for diarrhœal affections.

Macht claims results from the administration of benzyl benzoate, 20 per cent. alcoholic solution, 20 to 30 drops in a small amount of cold water, t.i.d., after meals.

Prophylaxis embraces the boiling of the drinking water and milk, the cooking or thorough cleansing of foods, personal cleanliness, the avoidance of dust, and screening against flies. To disinfect carriers, give emetine bismuth iodide, gr. iii, in powder form in cachets (not pills or tablets), with a hot drink, at 9 P. M., after retiring, daily, to at least 36 grs. (Jepps and Meakins.)

Dysentery, Bacillary.—An acute, or sometimes chronic ulcerative colitis, extending at times to the lower ileum, occurring endemically, epidemically, and sporadically, caused by various strains of the bacillus dysenteriæ, and possibly the bacillus pyocyaneus, paratyphoid bacillus, and other bacteria, and characterized by an incubation period of about two days (two to seven days), followed by a colicky diarrhœa and fever, abdominal pain and tenderness, nausea, vomiting, frequent small mucous and bloody stools, tenesmus, anorexia, and weakness. In the United States the disease is usually caused by the mannite-fermenting or Flexner type of organism; whereas in Japan the Shiga type predominates. Other strains or types are those of His, Strong, etc.

In marked cases (not in brief, mild cases), the serum of the patient agglutinates the dysentery bacillus causing the infection (and no other bacillus) at about the eighth to tenth day of the disease.

The disease is transmitted by fomites, contaminated water and milk, dust and flies, and is favored by overcrowding, as in institutions and camps. Summer diarrhœa in infants is commonly caused by the bacillus dysenteriæ (see Diarrhœa in Bottle-fed Infants and in Early Childhood).

Prognosis.—Under appropriate treatment the disease is usually cured in about a month. The prognosis becomes more serious the higher in the bowel the disease extends, being very serious in enteric cases.

Treatment.—ACUTE DYSENTERY: Put the patient to bed and keep him warmly covered; place hot water bottles to the feet, and protect the abdomen with a flannel binder. Apply frequently renewed hot poultices or turpentine stupes (a teaspoonful to the quart) to the abdomen.

The diet should be liquid, and administered in small quantities every three or four hours: broths, albumen water, rice or barley water, strained cereal gruels, Mellin's, or Liebig's, or Benger's food, water as required for thirst. It is advised that milk be deferred until the tongue clears, when it may be given boiled, and diluted with lime water or barley or arrowroot water. The ingesta should be "neither hot nor cold," so as not to excite peristalsis. All food and water should be withheld in the presence of vomiting.

At the outset the bowels should be thoroughly evacuated, best, says Osler, by means of (1) sodium sulphate or Rochelle salt, ℥ii of either for two doses an hour apart, then ℥i every three hours until the bowels have been thoroughly moved. Yeo and W. J. Buchanan give (2) sodium sulphate or magnesium sulphate, ℥i in ℥ss of water, every hour until the stools become yellow and free from mucus and blood (usually two or three days). Dickie gives (3) ℥ss of saturated magnesium sulphate and ♏x of dilute sulphuric acid in water every two hours until the stools are free from mucus and blood; the acid being given to destroy the bacilli. Other methods of purgation recommended are (4) calomel, gr. viii–xii, once or twice, followed after two hours by a dose of castor oil (Shiga); (5) castor oil ℥iv–vi, once, or in divided doses; (6) castor oil, ℥ss, followed the next morning by calomel, gr. ss, every hour for twelve hours, this course to be repeated twice or thrice, at the same time watching for salivation. The stools should be mixed with boiling water; or with sawdust and burned.

After the bowels have been thoroughly purged, prescribe bismuth in large doses and opium for the diarrhœa that remains:

℞ Bismuthi subnitratis .... ℥iv (℥ss–i per dose)
Mucilaginis acaciæ..... ℥ii
Aquæ, q.s., ad..... ℥iv

M. Sig.—Shake well, and take one to two tablespoonfuls every one to four hours.

Dover's powder or morphine, hypodermically, may be given as required (for drug formulæ, etc., see Part 11).

For tenesmus give a rectal enema of thin starch solution, ℥i–ii, containing 15 to 20 drops of laudanum, followed, if desired, by the application of silver nitrate solution to rectal ulcers through a speculum (see under Enteritis, for technique).

For hemorrhage, employ morphine and the abdominal ice-bag; raise the foot of the bed, and allow nothing by mouth, except ice to suck, for eight to twenty-four hours.

Bolus alba, or kaolin (see Part 11; and

Cholera Asiatica) has recently come to the front as a promising remedy for diarrhœal affections.

Serum therapy is employed; the sooner, the better the results. C. F. Martin says that the polyvalent serum (actively immunized horse serum: antibacterial) should be administered in as large doses and as frequently as necessary to produce results, beginning with "40 to 60 c.c. hypodermically in mild cases, 80 c.c. in severe cases, and 100 to 120 c.c. in desperate cases, repeated as required." He says the patient's general condition should improve in four to twelve hours, while the character of the stools may even become apparently worse.

Vincent and Muratet advise, for adults, in cases of average severity, 20 c.c., repeated in twenty-four hours, if necessary, and again, if necessary; in serious cases, 40 to 60 c.c., repeated daily, if necessary; in bad cases, as much as 50 c.c. twice daily; for children, ½ to ⅔ to ¾ the adult dose, according to age. The serum should be continued in diminishing doses until the stools are reduced to several a day.

Osler says the Pasteur Institute and Lister Institute serums "should be given in doses of 20 c.c. two or three times a day," (for about two or three consecutive days).

The serum employed against the Shiga type of dysentery (antitoxic and antibacterial) is given as follows, according to Thomas and Ivy—in mild cases, one subcutaneous injection of 10 c.c.; in severe cases, two injections of 10 c.c., at an interval of 6 to 10 hours; never more than 20 c.c. in one day (see also Serum Antidysentericum, in Part 11; and Anaphylactic Shock).

As the patient convalesces, the diet may be gradually increased, but no solid food should be given for a number of days after the stools have become normal.

B. Chronic Dysentery.—Rest in bed, fresh air day and night, and a simple diet consisting of boiled milk, diluted if necessary with lime water or barley water, eggs, beef juice, and well-cooked strained gruels, are important. A change of climate is beneficial. An occasional purge of castor oil, ℥ss–i should be given. Hillier gives castor oil, ℥i–℥ii, with tr. opii, ♏iv–x, t.i.d. Ortner favors repeated doses of castor oil together with tannin irrigations. Olive oil is also used. Bismuth subnitrate, ℥ss–i every three hours during the day; tannalbin, in ten-grain doses, gr. xxx–l per day; and tannigen in the same dosage is also recommended.

Once or twice every day the colon should be irrigated, very gently and slowly, the hips being elevated (or the knee-chest posture assumed), with about two quarts of a warm solution of silver nitrate, 1:5000, increased to 1:500, the silver being subsequently washed out and precipitated by means of salt solution; or instead of the silver, tannin, 0.5 per cent.; or alum, 0.5 to 1 per cent.; or salicylic acid, 1 per cent.; or creolin, 0.5 to 1 per cent.; or boric acid solution, two teaspoonfuls to the quart; or normal saline solution, ℥i ad Oi. The colon tube should be well smeared with vaseline. If the rectum is irritable it may be necessary to insert a cocaine (gr. i) or morphine suppository one-half hour before introducing the colon tube. The solution should be retained for twenty minutes, if possible.

The rectum and sigmoid should be examined and treated through specula (see under Enteritis, for technique).

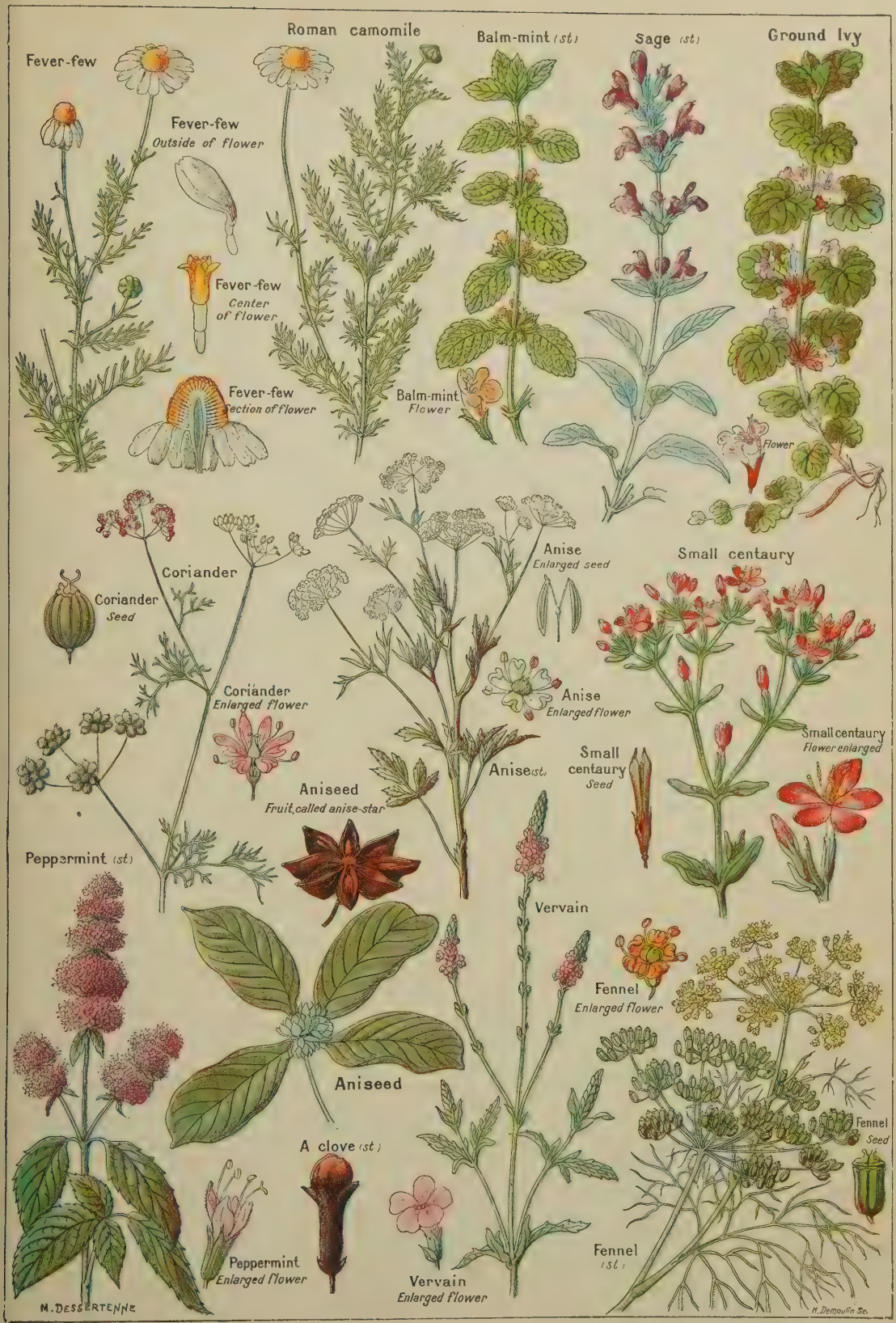
Irrigation of the colon through a cæcal or appendiceal fistula is a valuable mode of treatment in protracted cases.

It should be remembered, however, that prolonged local treatment, continued for several months, may in itself produce a permanent catarrhal colitis. See also the Treatment of Chronic Intestinal Catarrh, for fuller details.

Dyspepsia or Gastric Indigestion.—Gr. δυς ill + πέπτειν to concoct; L. *in*, neg. + *diges'tio*, from *dis*, apart + *ger'ere*, to carry. When a patient presents himself with the symptoms of gastric indigestion, *e.g.*, gastric discomfort, sense of fulness or pressure after eating, flatulent distention of the stomach, eructations, heartburn, gastralgia, nausea, vomiting, anorexia or capricious appetite, perhaps a coated tongue and fetid breath, perhaps constipation, perhaps headaches, dizziness, palpitations, lassitude, mental depression, insomnia, etc., the physician should first endeavor to ascertain whether the disturbance is functional or organic, while bearing in mind the fact that the large majority of cases are functional.

The Causes of these two kinds of dyspepsia may be conveniently classified as follows:

I. Functional Dyspepsia.—*a. Irritating Ingesta.*—Fried foods, sweets, tarts, pastry, hot breads, pancakes, sandwiches, nuts, pickles, spices, condiments, tea, coffee, alcohol, too much fat, too much carbohydrate, coarse vegetables, etc., tobacco, drugs (mercury, lead, copaiba, cubebs, sandalwood, male fern, purgatives, etc.), infectious material from the nose, pharynx, teeth, gums, and mouth; food that is too hot or too cold, imperfectly masticated food, the



LAROUSSE MÉDICAL

Plants that are digestants and stimulants.

result of hasty eating or bad teeth, excessive amounts of food, too frequent eating, the too frequent use of bitters and appetizers.

b. Unhygienic and Debilitating Influences.—Lack of sufficient rest before and after eating, bathing immediately after eating, irregular hours of eating, self-starvation, poor general health and debility due to lack of fresh air and adequate exercise, overwork and worry, loss of sleep, excessive venery, anæmia, tuberculosis, gout, diabetes, rickets, Addison's disease, plumbism, malaria, syphilis, infectious diseases, arteriosclerosis (aortitis and para-aortitis abdominis—Stockton), chronic cardiac, hepatic, pulmonary, or renal disease, etc.

c. Nervous Influences.—(1) Central nervous influences, occurring in overwork and worry, anxiety, loss of sleep, excessive venery, the abuse of alcohol, morphine, cocaine, tea, coffee, and tobacco, plumbism, neurasthenia, hysteria, insanity, excitement, depression, locomotor ataxia (gastric crises), general paresis, myelitis, brain abscess, brain tumor, meningitis, etc.

(2) Reflex influences, due to enteroptosis, movable kidney, uterine displacement, nephrolithiasis, cholelithiasis, cholecystitis, appendicitis, peritonitis, herniæ, pancreatic disease, utero-ovarian disease, constipation, angina pectoris, nasal, pharyngeal, laryngeal, and aural disease, eye-strain, male genital disease, pregnancy, perigastric, adhesions (following gastric or duodenal ulcer, gall-bladder disease, pancreatic disease, syphilitic hepatitis, chronic peritonitis, chronic tuberculosis), intestinal parasites and other intestinal diseases, intestinal obstruction, etc.

II. Organic Dyspepsia.—Dilatation of the stomach, chronic; gastric; and duodenal ulcer; gastritis, acute and chronic; cirrhosis or sclerosis of the stomach; cancer of the stomach.

Consider first the organic derangements: Dilatation of the stomach due to pyloric obstruction is characterized, in frank cases, by the copious periodic vomiting of sour-smelling food retained beyond the usual time (six or seven hours) followed by relief of symptoms, together with more or less thirst, dryness of the skin, oliguria and constipation, and demonstrable enlargement of the stomach (see Dilatation of the Stomach, Chronic). Gastric and duodenal ulcer is characterized by pain after eating, relieved by food or alkalies, the pain being localized, and often radiating to the back, epigastric tenderness commonly localized, sometimes tenderness to the left of the spine opposite the ninth and tenth dorsal vertebræ, hæmatemesis or occult bleeding detected by examination of the fæces (see Gastric and Duodenal Ulcer).

Acute gastritis is characterized by the sudden onset of acute symptoms: pain, nausea, vomiting, salivation, pyrosis, thirst, coated tongue, and foul breath. Chronic gastritis is characterized by chronic gastric indigestion, coated tongue, fetid breath, perhaps vomiting of mucus containing many leucocytes, etc. (see Gastritis, Acute and Gastritis, Chronic).

Cancer of the stomach is suggested by the age of the patient (usually beyond forty years), anorexia and the progressive loss of weight and strength, the presence of lactic acid after Boas test meal, and of the Boas-Oppler bacillus and blood in the stomach contents, and usually persistent diminution of the hydrochloric acid (see Cancer of the Stomach). Hydrochloric acid may also be absent in chronic gastritis, in atrophy of the gastric mucosa, and in nervous dyspepsia.

Cirrhosis or Sclerosis of the Stomach (*q.v.*) is very rare.

Gastric Analysis and Technique.—**Use of the Stomach Tube.**—First boil the tube, and place it in a basin of hot or ice water. Have the patient sit with the head slightly forward and the chin raised, and instruct him to take full deep breaths during the passage of the tube. Refrain, if possible, from putting the fingers in the patient's mouth. If the reflexes are excessively active, the pharynx may be carefully swabbed with a 4 to 10 per cent. solution of cocaine. The passage of the tube may be facilitated by having the patient swallow a mouthful of water at the moment of introducing the tube. Keep the latter in the median line.

In washing out the stomach, use each time ordinarily about a pint of fluid, and hold the funnel a little bit above the patient's mouth. To empty the stomach, lower and invert the funnel before all the fluid has left it, so as to insure a return siphonage. While withdrawing the tube, compress it with the fingers.

Contraindications to the use of the tube are: aneurysm, advanced heart disease, marked emphysema, advanced pulmonary disease, advanced arteriosclerosis, advanced cirrhosis of the liver with suspected œsophageal varices, recent ulcer, recent hemorrhage, recent corrosion, acute œsophagitis, acute febrile diseases.

Examination of the Stomach Contents.—The old method of procedure is as follows: Give to the patient in the morning, fasting, about two ounces of stale wheat bread, which should be well masticated, and eight to ten to twelve ounces of water (Ewald test breakfast). An hour later, withdraw the stomach contents, either by aspiration into a rubber bulb (Boas bulb or a Politzer bag)

attached to the outer end of the tube, or, better, by expression through the stomach tube, accomplished by the patient taking a deep inspiration and then compressing his abdominal walls as in the act of defecation. As suggested by Aaron, if a bulb is attached to the end of the stomach tube, and the bulb is kept compressed in the left hand during the introduction of the tube, at the instant the patient begins to retch, the tube not yet having entered the stomach, the latter's contents can be aspirated by allowing the bulb to expand and then immediately withdrawing the tube. The normal amount withdrawn is about 20 to 30 to 50 c.c.

The Ewald test-meal removed in one hour is, however, not reliable, because the curve of acid secretion is quite variable, even in normal individuals, and does not uniformly reach its crest an hour after the meal. Therefore Rehfuss's fractional method of analysis, using Rehfuss's tube, is preferable. The bulb attached to the capillary tube is swallowed at the time of taking the test-meal, and portions of the stomach contents are aspirated every 15 to 20 minutes until the stomach is empty. The protruding end of the tube is closed by a stop-cock. To secure a sample of contents for analysis, the stop-cock is opened, a 5 to 10 c.c. Luer syringe is inserted, and 1 to 3 c.c. of fluid withdrawn. The tube may be kept in the stomach (or duodenum) for a period of weeks, if desired.

To pass the duodenal tube, the patient, after swallowing the metal capsule, is made to lie on the right side with the hips elevated about ten inches. The capsule passes into the duodenum in fifteen to sixty minutes. Siphonage is started by the injection of a few c.c. of warm water. Pure duodenal fluid is clear bile, viscid and alkaline, and the foam is golden. Should the flow of bile become interrupted, inject a little warm water into the tube, and have the patient take deep breaths. The presence of the tube in the duodenum is indicated by the following tests:

a. Aspiration, using a 30 c.c. glass syringe, withdraws golden-yellow, viscid bile, negative to Congo paper.

b. Water injected can not be recovered by aspiration as it can when the tube is in the stomach.

c. The injection of air is apt to be followed by borborygmi.

d. A colored fluid, such as grape juice, swallowed alongside the tube, can not be recovered by aspiration.

The reddening of litmus paper indicates acidity. The turning blue (weak blue-black → hypochlorhydria; sky-blue → normal acidity or hyperchlorhydria) of Congo paper indicates the presence of free acids (always free hydrochloric acid with the above test breakfast). Tropeolin paper turns brown in the presence of free HCl, and on drying at a gentle heat the color changes to violet. Another test for free HCl is made by thoroughly mixing one drop of the stomach contents with one drop of Günzberg's solution (phloroglucin, gr. xxx, vanillin, gr. xv, alcohol, ʒi) in a white porcelain dish, and heating: the appearance of a cherry-red color indicates the presence of free HCl. According to Einhorn, if the gastric contents still give the reaction for free HCl when diluted 8 to 10 times, the acidity is probably normal; if the reaction is still obtained on diluting the gastric contents over 12 times, the acidity is above normal; and if a dilution of 5 times or less fails to give the reaction, the acidity is subnormal.

To test for lactic acid, give the Boas test meal, consisting of a tablespoonful of oatmeal flour boiled in a litre or quart of water down to the consistency of a thin gruel, or to 500 c.c. (one pint). This meal contains no lactic acid, which is present in bread in small amounts.

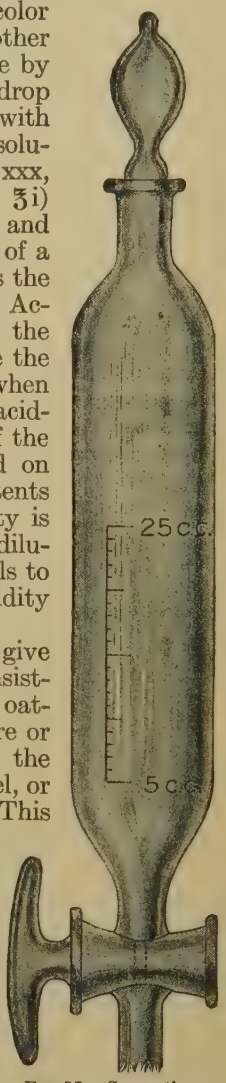


Fig. 35.—Separating apparatus suitable for making test for lactic acid. (Strauss's.)

Using the separating funnel shown in Figure 35, pour in the filtered stomach-contents to the 5 c.c. mark, then add ether to the 25 c.c. mark. Shake thoroughly for three minutes, and then allow the ether to separate. Now run out the contents of the tube until the 5 c.c. mark is reached; add distilled water to the 25 c.c. mark, then two drops of a 10 per cent. solution of ferric chloride, and shake gently. The appearance of an intense yellow-green color indicates the presence of 0.1 per cent. lactic acid; a slight green color, 0.05 per cent. (Strauss' Test.)

Ufflelmann's less accurate test is as follows: To 8 to 10 c.c. of water containing one drop of ferric chloride solution, 10 per cent., add the gastric filtrate drop by drop. The appearance of a yellowish-green color indicates the presence of lactic acid.

The presence of lactic acid means anacidity associated with stagnation. Anacidity without stagnation precludes the presence of lactic acid.

If the stomach still contains food in the morning, twelve hours after a substantial supper of porridge containing rice and raisins and one or two slices of buttered bread, taken at 8 P. M., there exists pyloric obstruction. Examine the abdomen by sight and touch for the presence of tumor and of peristaltic waves, and for points of tenderness. Examine the gastric contents microscopically, and by means of the benzidin test, for blood, for pus cells, the long Boas-Oppler bacillus, sarcinæ, and yeast cells.

A bismuth X-ray examination gives important information. Two to four ounces of bismuth sulphate suspended in mucilage of acacia or in milk are given on an empty stomach, say at 5 A. M., and six hours later the patient is radiographed in the upright position. The stomach should then, normally, be empty. If bismuth is still present, it indicates pyloric obstruction. A second bismuth meal is now given and frequent radiographs taken with the tube focussed upon the third lumbar vertebra, taking care to exert no pressure upon the stomach. (R. C. Cabot.) If it is desired to study the passage of the bismuth through the intestines, examinations may be made at six and twelve hour intervals for two or three days.

The barium X-ray meal consists of four fluid ounces of barium sulphate mixed with water to the consistency of a thick cream added to eight ounces of buttermilk or sweet milk. It is given in the morning on an empty stomach not preceded by a purge.

In cancer of the cardia, fluoroscopy reveals an irregularly outlined cardia, with the œsophagus above only slightly dilated; whereas in cardiospasm the œsophageal dilatation is large and fusiform and its lower extremity conical and smooth in outline.

The stomach should be empty in six hours, the ileum three hours later. Rapid emptying of the stomach occurs in hunger, neurosis, gastritis, ulcer, or extra-gastric irritation. Rapid emptying of the ilium points to enteritis or subacute appendicitis; delayed emptying to cicatrix, tumor, or chronic appendicitis.

At the end of 24 hours most of the barium should be beyond the splenic flexure. (H. E. Cheney.)

Positive signs of ulcer are (1) the presence of a barium filled cavity outside the outline of the stomach, (2) the appearance of barium passing through a perforation, (3) pyloric obstruction, (4) a permanent hour-glass stomach, and (5) the incisura or filling defect. The earlier the pain after eating, the nearer the ulcer to the œsophagus, as a rule. Pain occurring two to four hours after eating means usually duodenal ulcer. Vomiting immediately after eating is not suggestive of ulcer, for in ulcer food at first causes relief.

Absence or imperfection of the duodenal cap (the first portion of the duodenum leading off from the stomach) points to the presence of adhesions, pressure, an adjacent tumor, tension from a heavy stomach, cicatrization of an old ulcer, etc.

Quantitative Analysis of the Gastric Juice.—Equipment: Beakers; medicine droppers or pipettes; water bath; bath thermometer; separating funnel graduated up to 25 c.c.; cylinder graduated up to 100 c.c.; burette of 50 c.c. capacity; phenolphthalein, alcoholic solution, 1 per cent.; dimethylamidoazobenzol, alcoholic solution, 0.5 per cent.; alizarin (sodium alizarin sulphonate) aqueous solution, 1 per cent.; ether; ferric chloride, 10 per cent. solution; calcium chloride, aqueous solution, 1 per cent.; distilled water; decinormal sodium hydrate solution. Normal sodium hydrate solution = Na (23) + O (16) + H (1), or 40 (molecular weight) gms. of sodium hydrate to one litre of distilled water. Decinormal sodium hydrate solution = 10 c.c. of normal sodium hydrate solution + 90 c.c. of distilled water, 1 c.c. of which contains 0.004 gm. NaOH, which exactly neutralizes 1 c.c. of decinormal HCl solution, or 0.00365 gm. HCl.

Töpfer Method of Analysis.—1. Fill the burette up to 50 c.c. with the decinormal sodium hydrate solution. Place in a beaker 5 c.c. of the filtered (unfiltered, says Webster, filtering causing the absorption of free HCl) stomach contents, obtained one hour after the Ewald test-breakfast, and add two or three drops of the phenolphthalein solution. Now add the decinormal sodium hydrate solution drop by drop (avoiding shaking, which would introduce acid CO_2 from the air), until a permanent red color is produced. Then read off, at the lowest point of the concavity of the fluid, the number of c.c. of decinormal solution used. If x c.c. were used, then 20x c.c. of decinormal solution would be required to neutralize 100 c.c. of gastric juice; or,

Total acidity (free HCl + combined HCl + acid phosphates + organic acids, or lactic, acetic, butyric, carbonic acids, etc.) = 20x.
40 – 60 = normal acidity (varies with the individual and the diet).
Below 40 = subacidity.
5 – 8 = atrophy of the gastric glands.
Above 65 = hyperacidity. (Paul Cohnheim.)

2. Place 5 more c.c. of the filtered (unfiltered, says Webster) stomach contents in

another beaker; add 2 or 3 drops of the dimethylamidoazobenzol solution; and add decinormal sodium hydrate solution, drop by drop, until the solution in the beaker is permanently yellow. If y c.c. were used, then 20 y c.c. of decinormal solution would be required to neutralize the free HCl of 100 c.c. of the gastric juice; or,

Free HCl = $20y$.

3. Repeat the same procedure, using another 5 c.c. of filtered stomach contents and 2 or 3 drops of the alizarin solution as an indicator, and add the decinormal solution until a permanent yellow color is produced. The number of c.c. used (z) x 20 = the number of c.c. required to neutralize all the acid factors in 100 c.c. of the gastric juice except the combined HCl; or,

Combined HCl = total acidity $(20x) - 20z$.
a. Total acidity = $20x$.
b. Free HCl = $20y$.
c. Combined HCl = $20x - 20z$.
d. Sum of free and combined HCl = $20y + (20x - 20z)$.
e. Organic acids and acid phosphates = $20x - (20y + \cdot 20x - 20z)$.
f. Sum of free and combined HCl x 0.00365 = percentage of HCl (normal = 0.2 per cent.).

If free HCl is absent, and the total acidity is 20 or less, make a quantitative test of the ferments. Diminution of the rennin secretion usually indicates gastritis as opposed to a neurosis; a very great diminution indicates glandular atrophy.

With a pipette or medicine dropper, introduce one c.c. of the filtered gastric contents into a graduated cylinder of 10 c.c. capacity. Then add tap water up to 10 c.c.; shake by inverting several times, and pour 5 c.c. into a test-tube, marked " 1 to 10."

Add water again up to 10 c.c. in the graduated cylinder, invert several times, and pour 5 c.c. into a second test-tube, marked " 1 to 20." Continue the dilutions in the same manner to " 1 to 40," " 1 to 80," " 1 to 160," " 1 to 320," etc. Then add to each test-tube 5 c.c. of boiled milk and 2½ c.c. of a one per cent. calcium chloride solution, shake, and place in a water-bath which has been heated to 102° F., or 40° C. Use a control test-tube containing only milk and calcium chloride, which should not coagulate.

Normally the test-tube, " 1 to 160," should show a " firm, cake-like coagulation"; " 1 to 320," a " fine, flaky coagulation"; and the preceding dilutions, a " solid, cake-like coagulation." In higher dilutions than " 1 to 320," no coagulation occurs except in hypersecretion.

	Atrophy	Interstitial gastritis	Simple catarrh	Subacidity	Hyperchlorhydria
Total acidity	5–6	6–12	14–20	25–40	70–100
Rennin	1–1 to 1–10	1–10 to 1–40	1–80 to 1–160	1–200	1–200 to 1–800

(After Paul Cohnheim).

To examine the stomach contents for peptolytic ferments by means of silk peptone, proceed as follows: Neutralize 5 c.c. of the stomach contents with magnesium oxide and filter. To the filtrate add 0.2 gm. of silk peptone incubate the mixture and examine every thirty minutes for a possible separation of crystals (tyrosin), the occurrence of which indicates the presence of peptolytic ferments. A test for tyrosin should be applied in order to make sure that the crystals are those of tyrosin.

Organic disease having been excluded, next turn the attention to the functional gastric disorders, bearing in mind the various dietetic, unhygienic, and nervous causes of functional dyspepsia hereinbefore enumerated.

The principles of treatment of the dyspepsias due to dietetic errors and unhygienic and debilitating influences are described in the treatment of chronic gastritis. The dyspepsias ascribed to nervous (also debilitating) influences are considered under Nervous Dyspepsia. The treatment of the reflex dyspepsias consists primarily in the removal of the cause. Reflex dyspepsia is usually characterized by hyperchlorhydria and hypersecretion, due to reflex excitation of the gastric secretion (see Hyperacidity).

Acute and chronic gastric indigestion in infants is considered under acute and chronic gastritis respectively.

Dyspepsia, Atonic.—See Dyspepsia, Nervous, and Splanchnoptosis.

Dyspepsia, Nervous.—Nervous dyspepsia is a functional gastric disorder caused by both direct and reflex nervous influences. Vagus stimulation dilates the cardia, stimulates gastric peristalsis and secretion, and probably relaxes the pylorus. Sympathetic or splanchnic stimulation diminishes gastric tonus and peristalsis, but probably increases the tone of the pylorus.

Etiology.—(1) Central or direct nervous influences: Neurasthenia; hysteria; mental disturbance or insanity; overwork, worry, and anxiety, etc.; excessive venery; plumbism; the abuse of alcohol, morphine, cocaine, tea, coffee, and tobacco; locomotor ataxia

(gastric crises); general paresis; myelitis; brain tumor, brain abscess, etc.; debilitating diseases: pulmonary tuberculosis, syphilis, malaria, anæmia, diabetes, gout, rickets, nephritis, Addison's disease, arteriosclerosis (aortitis and para-aorititis abdominis—Stockton), etc.

(2) Reflex nervous influences: Enteroptosis; movable kidney; nephrolithiasis; cholelithiasis; cholecystitis; appendicitis; uteroovarian disease; displaced uterus; pregnancy; male genital disease; intestinal disease—chronic constipation, worms, intestinal obstruction, etc.; pancreatic disease; hernia; perigastric adhesions (following gastric or duodenal ulcer, gall-bladder disease, pancreatic disease, syphilitic hepatitis, chronic peritonitis, tuberculosis); nasal, pharyngeal, laryngeal, and aural disease; eyestrain, etc.

Symptomatology.—The symptomatology is variable. It embraces: noisy eructations of swallowed air (see Eructatio Nervosa); audible borborygmi and gurgling due to peristaltic unrest; vomiting, which is in rare instances serious (see Vomiting); cardiospasm (*q.v.*); sense of weight and pressure and burning, and usually acid eructations, occurring usually at the height of digestion, or from one-half to three or four hours after eating, and relieved by vomiting, by food, and by alkalies (hyperacidity, *q.v.*); continuous, or rarely intermittent or periodic supersecretion of usually a hyperacid gastric juice, associated with pain, acid eructations, perhaps vomiting of a clear, watery, highly acid fluid, and eventuating in gastric dilatation due to pylorospasm (hypersecretion or gastrosuccorrhœa, *q.v.*); subacidity, or anacidity, possibly even achylia (*q.v.*); gastric distress appearing soon after eating and lasting until the stomach is empty (hyperæsthesia gastrica, *q.v.*); possibly sudden attacks of severe epigastric pain radiating toward the back, and usually independent of the taking of food (gastralgia, *q.v.*); attacks of excessive hunger (bulimia, *q.v.*); anorexia (*q.v.*); capricious appetite; regurgitation; salivation; usually constipation; perhaps anæmia, headaches, dizziness, insomnia, palpitations, lassitude, depression, and other neurasthenic or hysterical symptoms. Periods of illness often alternate with periods of well-being. Cohnheim says, "actual pain never occurs in nervous dyspepsia"; nor achylia. As distinguished from chronic gastritis, says Webster, the acidity is variable in different examinations in nervous dyspepsia, whereas it remains constant in gastritis; the ferments are normal in nervous dyspepsia, diminished in gastritis; little or no mucus is present in nervous dyspepsia, whereas it is abundant in gastritis. (See Dyspepsia or Gastric Indigestion for diagnostic information regarding the dyspepsias.)

Prognosis.—This depends upon the ability to discover and eradicate the cause. In mild, purely neurasthenic cases the prognosis is good under appropriate treatment; but relapses may occur. Some cases are very intractable.

Treatment.—Search for and endeavor to remove all possible causal factors. In neurasthenic and myasthenic states, enjoin, where practicable, adequate exercise in the open air, adequate rest, psychical and physical (perhaps rest in bed for about a month in severe cases: see Neurasthenia), perhaps change of scene and climate, a daily tepid bath followed by a cool douche and friction with a coarse towel, especially the circular cold and warm douche over the stomach and the spinal douche, daily brushing of the teeth before breakfast with castile soap and warm water, fresh air day and night, regular hours of eating, rest for one-half to one to two hours both before and after eating, preferably reclining on a couch on the right side, slow and thorough mastication of the food.

Gentle massage, practiced no earlier than one and a half hours after a meal, is useful for both gastric and intestinal atony; as is also galvanization or faradization, (see Medical Electricity), a large well-moistened sponge electrode being placed over the stomach, and a smaller sponge electrode over the seventh or eighth dorsal vertebra. The current should be strong enough to produce visible twitchings of the abdominal muscles, but should be applied for no longer than ten minutes. The electrical abdominal roller combines massage with electricity. Says Cohnheim, employ the galvanic current with irritable patients, the faradic current with relaxed patients.

A supporting abdominal binder should be worn if enteroptosis is evident (see Enteroptosis).

Iron, arsenic, and strychnine or nux vomica are indicated for anæmia and debility, (see Part 11 for drugs).

Says Cohnheim, the diet should be adapted to the physical constitution of the patient, *e.g.*, full diet for the undernourished; a diet restricted in carbohydrates and fats for the obese; laxative diet for the constipated; bland soft diet for organic disease.

In atonic, asthenic, or myasthenic states,

in which the stomach is presumed to share, it is recommended that the diet be bland, nutritious, soft or finely divided, and taken in small amounts at three-hour intervals (four or five small meals a day), fluids with meals being restricted, but not between meals: finely minced beef, mutton, chicken, stewed tripe, stewed whitefish, eggs, raw or boiled three minutes, custards, well-cooked cereals, vegetables in purée form, well-masticated toast, rusks, or zwieback. Each morning, about one hour before breakfast, the patient should take a glassful of hot water.

A digestive, such as taka-diastase, or pepsin, or pancreatin, or papain (see Part 11), may be of service in suitable cases. Strychnine, or nux vomica is advised as a general and local stimulant and tonic.

For the treatment of nervous anorexia, nervous vomiting, hyperacidity, hypersecretion, subacidity, hyperæsthesia, gastralgia, nervous belching, cardiospasm, bulimia, and pylorospasm, consult the appropriate heading.

Dysphagia.—Gr. *δυs-* ill + *φάγειν* to eat: difficulty in swallowing. **Causes.**—Dental, gingival, lingual, palatal, tonsillar, peritonsillar, post-nasal, pharyngeal, laryngeal, or œsophageal inflammation or new growth; retropharyngeal abscess; cervical caries; syphilis; mediastinal tumors; pericarditis with effusion; fracture of the hyoid bone or larynx; aneurysm; cardiospasm and œsophagismus; œsophageal stenosis (*q.v.*, for causes); œsophageal paresis due to lesions in the pons and medulla, *e.g.*, hemorrhage, tumors, multiple sclerosis, tabes, general paresis, bulbar palsy; or to diphtheritic or influenzal neuritis; or to progressive lenticular degeneration.

Before passing an œsophageal bougie, exclude aneurysm of the descending aorta by means of bismuth and the X-rays (see under Dyspepsia). For the manner of introducing an œsophageal tube and the contraindications, see Dyspepsia; see also Œsophageal Affections.

Dyspnœa.—Gr. *δυs-* ill + *πνοῖα* breath. Difficult or labored or rapid breathing or breathlessness. The normal frequency is 18 per minute.

Causes.—Exertion; excitement; slight exertion in high altitudes; cardiac disease; pericardial effusion; angina pectoris; pulmonary disease: emphysema, bronchitis, acute pulmonary congestion, pneumonia, phthisis, pulmonary fibrosis, atelectasis, post-operative collapse of the lungs, pulmonary œdema, asthma, hay fever, pleurisy, pneumothorax, pneumatosis; laryngeal obstruction: acute laryngitis, spasm of the glottis, œdema of the glottis, laryngeal diphtheria, pertussis, foreign bodies, tumors, fracture of the hyoid bone or larynx; tracheal obstruction (*q.v.*, for causes); bronchial obstruction (*q.v.*, for causes); retropharyngeal abscess; Ludwig's angina; pushing up of the diaphragm by gas, fluid or tumor; mediastinal tumors or abscess; aneurysm; paralysis of the diaphragm, as in acute anterior poliomyelitis and transverse cervical myelitis; erythræmia; acidosis: diabetes, starvation, eclampsia, uræmia, thyrotoxicosis, toxic liver conditions; lactic acid acidosis due to long hard muscular exertion; debility; anæmia; obesity; gout; plumbism; infectious diseases; hysteria.

Dystrophy, Progressive Muscular.—Gr. *δυs-* ill + *τροφή* nourishment. A rare, usually hereditary and familial myopathy, appearing as a rule in early childhood, characterized by a slowly progressive, primary muscular atrophy, which begins almost always in the proximal muscles of the limbs and in the trunk, and is associated with a pseudo-hypertrophy of some of the muscles, especially those of the calves, and diminished or lost tendon reflexes.

When the muscles of the shoulder-girdle are affected, the scapulæ appear "winged," and when the patient is lifted by the axillæ the shoulders are carried away upward ("loose shoulders").

When the muscles of the back, gluteal region, thigh and calf are affected, the patient, on rising from a sitting posture on the floor, climbs up his lower limbs with his hands. Lordosis is also present when the back muscles are involved. Paralysis of the glutæi muscles results in a waddling, duck-like gait.

The facial muscles are rarely involved. Contractures eventually occur.

The amyotonia congenita of Oppenheim is a very rare congenital, but not hereditary, usually fatal, general or local muscular flaccidity of infants, with diminished or absent tendon reflexes. It is a type of muscular dystrophy.

Hypoglycæmia is present in all cases of progressive muscular dystrophy. It may be the result of adrenal or other endocrine disease.

Prognosis.—This is unfavorable as to cure, but not as to life. The degenerative process may possibly be brought to a standstill, however, by means of systematic massage, etc.

Treatment.—Massage practiced for about an hour each day, mild galvanism, passive movements, moderate gymnastic exercise of the affected muscles, carefully avoiding overexertion, these measures being continued for years with the hope of bringing the disease to a standstill, may be of some benefit, but much is not to be expected. Good nutrition and a healthful open-air life are important adjuvants.

Light splints may be applied at night for the prevention of contractures. Troublesome contractures may require tenotomy (see Orthopædics).

Dysuria.—Gr. δυs- ill + οὖρον urine: painful or difficult urination. See Gynæcology, Part 2, and Male Genito-Urinary Diseases, Part 3.

Ecchymosis, Traumatic.—Gr. ἐκ out + χύμα a flow; τραῦμα a wound. See Contusion.

Echinococcus or Hydatid Disease.—Gr. ἐχῖνος hedge-hog + κόκκος berry; L. *hydatis;* Gr. ὑδατίς vesicle. The Echinococcus or hydatid cyst which occurs in the various organs in man is caused by the ingestion of the eggs of the tænia echinococcus, a minute

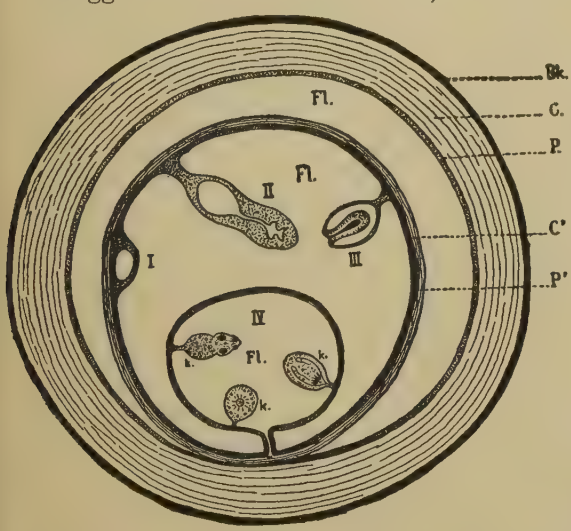


Fig. 36.—Echinococcus compositus hydatitosus (endogenus). Bk, the connective-tissue capsule. C, the cuticular layer of the mother-cell, or cyst. P', the parenchymatous layer of the mother-cell. C', the cuticular layer of the daughter-cell. P', the parenchymatous layer of the daughter-cell. Fl, the fluid contents. I, II, III, IV, stages of development of the head of the echinococcus (k) and the breeding-capsule (IV).

tapeworm which lives in the intestine of the dog, by whom it is contracted by the eating of infected hogs, cattle, and sheep. In the human stomach the six-hooked embryo, freed from its egg-shell by digestion, bores through the stomach or intestinal wall, and eventually reaches various organs, particularly the liver, where it develops into a cyst of gradually increasing size, which consists of an inner, proper capsule, containing a transparent fluid, and an outer connective tissue capsule. From the inner capsule, daughter cysts, and within the latter, granddaughter cysts, may develop and be set free in the cavity of the original cyst. Later the parent cyst develops buds which become scoleces or heads provided with suckers and hooklets, and these, if they should reach the intestine of the dog, are capable of growing into adult tæniæ. (Figs. 36, 37, and 38.)

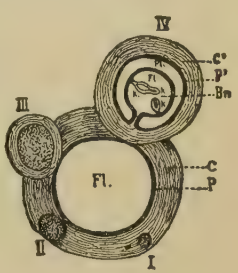


Fig. 37.—Echinococcus ectogenus. C, the cuticular layer of the mother-cyst. P, the parenchymatous layer of the mother-cyst. C', the cuticle of the daughter-cyst. P', the parenchymatous layer of the daughter-cyst. k, the echinococcus head. Br, the breeding-chamber.

A positive diagnosis of hydatid disease is made only by finding the "hooks" or "heads" (see the pictures) in the discharged or aspirated cyst fluid. If the cyst content is purulent or the walls calcified, a diagnosis may possibly be made by means of the X-ray.

Small cysts often undergo spontaneous cure; but the cyst may rupture into neighboring parts, or it may suppurate. If it ruptures into a bronchus, spontaneous cure may occur.

Treatment.—This is surgical. The inner or parasitic capsule is cautiously removed from the outer, connective tissue capsule, by first incising the latter and stitching it to the parietes of the body, and then raising it from the inner capsule with great care to avoid rupture. After the inner sac has been removed, the resulting cavity is allowed to drain externally.

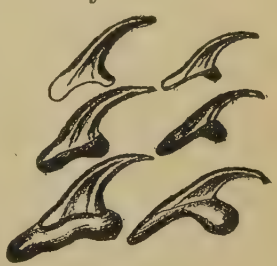


Fig. 38.—Echinococcus hooks. (J. C. Wilson).

When operating within the abdominal cavity, do not allow any of the fluid contents of the cyst to escape and thereby cause a general dissemination of daughter cysts.

The thoracic route is required in subphrenic and pulmonary hydatids.

If the cyst suppurates it should be treated as an abscess.

Preventive measures embrace thorough cleansing of vegetables and fruits, boiling the drinking water, and the avoidance of contact with dogs.

Eclampsia.—Gr. ἐκ out + λάμπειν to flash. See Convulsions.

Edema.—See Œdema.

Eel Worm.—See Ascariasis.

Eighth Nerve.—See Ear Diseases, Part 7.

Electricity, Medical.—See Medical Electricity.

Elephantiasis.—See Skin Diseases, Part 5

Elevation of Temperature.—See Fever.

Eleventh Nerve.—See Spinal Accessory Nerve.

Embolism.—L. *embolis'mus*, from Gr. ἐν in + βάλλειν to throw. The occurrence of embolism is usually manifested by sudden severe pain. If in an extremity, the limb is at first usually pale and cold and slightly œdematous, and pulsation is absent in the affected artery below the embolus. Unless a collateral circulation is established, cyanosis and eventually gangrene supervene. Hemorrhage may follow pulmonary, mesenteric (see Intestinal Obstruction) and renal embolism. Apoplexy (*q.v.*) occurs in cerebral embolism; sudden death in embolism of the heart.

Pulmonary embolism is characterized by sudden pain in the side and dyspnœa, subsequently cough and perhaps (not always) the spitting of blood, with, if the infarct is very large, the local signs of consolidation, *e.g.*, dulness, increased vocal fremitus, diminished breath sounds, crepitant râles, and perhaps bronchial breathing. If a large blood-vessel is occluded, the dyspnœa is intense and unconsciousness and rapid death from heart-failure ensue. Pleurisy, abscess, gangrene, or pneumonia may result from an infected pulmonary embolus.

For splenic embolism see Splenic Infarction.

Etiology of Embolism.—Thrombosis, occurring in the veins of the leg, brain, uterus (following childbirth or even menstruation), right heart, pulmonary artery, (the latter two the result of feeble circulation in chronic heart disease); arteriosclerotic or atheromatous abscesses or ulcers; aneurysm, from which particles of clot may become detached; entrance of fat into the circulation, occurring in bone fracture, concussion of the body, atheroma of an artery, diabetes mellitus, inflammation or laceration of subcutaneous fatty tissue, fatty degeneration of the internal organs, subcutaneous injections of oil; subcutaneous injection of paraffine or of insoluble mercury preparations; entrance of gas into a vein occurring during an operation, or in childbirth, or as a result of infection with the bacillus ærogenes capsulatus; parasites and other bodies, *e.g.*, the malarial plasmodium, bacteria, cells of the bone marrow, liver, placenta, and tumors, and destroyed blood corpuscles; septico-pyemia and endocarditis; appendicitis; chlorosis.

Treatment of Embolism of a Limb.—Lower the limb and apply moist heat, and administer morphine, if necessary, for pain. Surgical removal of the embolus may be considered (see Alexis Carrel's work on vascular surgery). F. Bauer has successfully removed an embolus from the abdominal aorta. While an assistant compressed the aorta, the latter was incised, the clot extracted, and the opening closed with fine silk.

If gangrene sets in, keep the parts aseptic by means of tincture of iodine and a sterile cotton dressing, and when a well-marked line of demarcation has formed, and the inflammation in the sound tissue has subsided, amputate. The lower limit of sound tissue may be ascertained by rubbing the skin vigorously with alcohol and ether, when a well-outlined hyperæmia will ensue in the sound skin (W. Sandrock).

Treatment of Pulmonary Infarction.—Enjoin absolute rest propped up in bed for eight or ten days, including feeding with a spoon, the use of a bed-pan, the administration of morphine for cough, pain, and restlessness, and of laxatives to avoid straining at stool. Oxygen may be administered per inhalation if practicable (see Pneumonia, Lobar). Apply counter-irritation to the chest in the form of hot compresses, a large mustard poultice, and dry or wet cups (see Cupping). Give heart stimulants hypodermically, if needed, *e.g.*, camphor, ether, brandy, whiskey, strychnine, digitalin, strophanthin, atropine, adrenalin, caffeine, or whiffs of ammonia vapour, or aromatic spirits of ammonia by mouth, and hot fomentations over the heart (see Part 11 for drug formulæ, etc.)

For pain, the side may be strapped from below upward with overlapping strips of adhesive plaster extending from spine to sternum.

For hemorrhage, see Hæmoptysis.

The diet should be light. The patient should remain in bed for four to six weeks and should keep quiet for months. The prognosis is usually good.

Embolism, Cerebral.—See Apoplexy.

Pulmonary.—See Embolism.

Emesis.—Gr. ἐμεῖν to vomit. See Vomiting.

Emphysema, Pulmonary.—Gr. ἐμφύσημα inflation; *L. pul'mo*, lung. General pulmonary emphysema is a general dilatation of the pulmonary air cells due to atrophy of their walls, and is manifested by the following signs and symptoms, viz.: shortness of

breath present sometimes only on exertion and increased during exacerbations of bronchitis to which the patient is subject; cyanosis; increased antero-posterior diameter of the chest (barrel-shaped chest) and round shoulders; increased resonance on percussion and enlarged area of resonance overlapping the heart, liver, and spleen; diminished fremitus; breath and voice sounds weak, inspiration short and expiration prolonged and accompanied by râles and ronchi if bronchitis is present. The heart gradually hypertrophies, and breaks in compensation are prone to occur.

Etiology.—Congenitally weak lung tissue due to heredity, *e.g.*, emphysema and gout in the forebears (the disease is not rare in children); old age, chronic alcoholism; habitually high intravesicular pressure due to coughing in chronic bronchitis and in whooping-cough, to asthma, laryngeal stenosis, heavy lifting, and glass and wind instrument (?) blowing; adhesive pleuritis; dust; premature ossification of the costal cartilages (?).

Treatment.—Treatment aims only to check the progress of the disease and to relieve symptoms. Residence in a warm equable climate, such as that of Southern California, Florida, and Egypt, is best. The patient should lead a quiet life, should dress warmly, and should avoid exposure to inclement weather, dust, and other irritating inhalations. The bowels should be kept regular, employing, if required, an occasional saline before breakfast. The diet should be simple and easily digestible; in obese patients it should be restricted (see Obesity). Deep breathing exercises are beneficial. The inspiration of compressed air and its expiration into rarified air by means of a portable apparatus, such as that of Waldenburg, gives great relief to the dyspnœa. Practiced for one hour a day for months it may produce permanent relief (Musser.)

Bronchitis and asthmatic attacks should be treated as described under their respective headings. Sodium iodide, gr. v, t.i.d.p.c., well diluted in water or milk, or the syrup of hydriodic acid, if the former causes indigestion, is recommended (see Part 11). Manual compression of the thorax during expiration, with the patient prone and the hands applied over the axillary regions, is useful as an aid in expelling the secretions.

If the heart becomes weak, prescribe tincture of digitalis, about five drops, well diluted, t.i.d., or strychnine, gr. $\frac{1}{20}$, three or four times a day. In severe dyspnœa and cyanosis, remove from 200 to 300 c.c. of blood. Oxygen inhalations (see under Pneumonia) are also of value here. Give morphine and atropine for restlessness.

Empyema.—Gr. ἐν within + πύον pus. See under Pleurisy.)

Encephalitis Acuta.—Gr. ἐγκέφαλος brain + -ιτις inflammation. The symptoms of acute inflammation of the brain are headache, nausea and vomiting, fever, rapid pulse, somnolence, vertigo, delirium, perhaps paralyses or convulsions, sometimes, when compression becomes marked, slowing of the pulse and respirations, choked discs, and coma. The prognosis is not hopeless.

The diagnosis is seldom made. The condition is to be distinguished from meningitis, sinus thrombosis, brain tumor, abscess, hemorrhage and softening, brain syphilis, acute poisoning, uræmia, acidosis, hysteria.

Etiology.—Poisoning with gas, alcohol, lead, arsphenamine, perhaps gasoline fumes, etc.; traumatism; acute infectious diseases and septico-pyemia; otitis media; sinusitis; rabies; sleeping sickness; general paresis; syphilitic meningitis; tuberculous menigitis; trichinosis; malaria.

Treatment.—Enjoin absolute rest in bed in a quiet, darkened room with the head high and an ice cap applied. Place leeches to the temples and mastoids. Bleed the patient unless anæmic. Give a daily purge. Avoid heart stimulants so as to avoid hemorrhage. Prescribe liquid diet. Lumbar puncture (*q.v.*) may be of value.

Encephalitis Epidemica vel Lethargica.—A diffuse encephalitis affecting chiefly the gray matter of the midbrain, and manifested by somnolence or stupor of gradual onset, accompanied by bilateral oculomotor palsy and sometimes other paralyses, with slight pyrexia, lasting several days or weeks or months, or even a year or longer, and terminating fatally in from 4.5 to about 25 per cent. of the cases. The blood and spinal fluid show no material changes. The disease may be a new affection or a cerebral form of poliomyelitis or influenza. A minute Gram-negative coccus has been discovered by Strauss, Hirschfeld, and Loewe.

Characteristic manifestations of variable incidence are as follows, (*e.g.*), catalepsy and flexibilitas cerea (wax-like flexibility), usually associated with Parkinson's Syndrome (see Paralysis Agitans); myoclonic phenomena preceded by lancinating pains; tic-like movements (blepharospasm, etc.,); tremors, choreiform and choreo-athetoid movements, with spasticity, contractures and dysarthria (symptoms of progressive lenticular degeneration, *q.v.*); pupillary inequality or

sluggishness to light, nystagmus, and asthenopia due to accommodative or muscular palsy; delirium, frequently occupational, of variable degree and duration; emphoria, jocularity and perhaps spasmodic involuntary laughter, sometimes alertness and talkativeness (mania); depression, even suicidal; emotional instability and irritability, behavior oddities; amnesia of varying degree; loss of initiative and energy, stuporous states; sometimes wakefulness at night and drowsiness in the day time.

Relapses of variable intensity, often with the appearance of new symptoms, are frequently observed. The symptoms enumerated may appear apparently as sequelae. Cranial nerve palsies may persist for many months after apparent recovery. Polyuria and dystrophia adiposo-genitalis (hypopituitorism) have been observed as sequelae. Epidemic hiccough may be a manifestation of encephalitis.

Treatment.—No specific treatment has been discovered. Hyoscine is recommended for insomnia and for muscular rigidity and spasms.

Encephalocele.—Gr. ἐγκέφαλος brain + κήλη hernia. See Meningocele.

Endocarditis, Acute.—Gr. ἔνδον within + καρδία heart + -ιτις inflammation. Acute endocarditis presents usually no distinctive sign or symptom. Fever, or augmentation of an existing fever, leucocytosis, palpitations, and an increase in the force and rapidity of the heart's action are usually present, together with a mitral systolic murmur, and later an increase in the area of cardiac dulness. Myocarditis is commonly present, as shown by irregularity in the heart's action, feeble pulse, dyspnœa, and precordial distress. Pericarditis sometimes occurs, and renders the prognosis serious.

Osler describes a serious chronic septic endocarditis, characterized anatomically by chronic vegetative changes superimposed upon old valvular lesions, and clinically by a prolonged septic fever lasting for months and unassociated with any special disturbance of the heart's action. The condition simulates typhoid fever, tuberculosis, or malaria. It is due, says Billings, to the streptococcus viridans, and is usually the result of chronic pyorrhœa alveolaris.

Embolism is apt to occur in endocarditis—in the kidney, spleen, brain, eye, peripheral arteries and subcutaneous tissues. The tender finger tips which occur in septic endocarditis are probably embolic.

Anæmia is at times a prominent symptom.

Valvular insufficiency due to sclerosis is prone to follow.

Etiology.—Rheumatic fever, even torticollis (rheumatism is probably the cause in 95 per cent. of the cases, says Kerely); chorea; influenza; scarlet fever; pneumonia; tuberculosis; typhoid fever; measles; diphtheria; cerebrospinal meningitis; smallpox; chickenpox; dysentery; gonorrhœa; syphilis; septicopyemia, occurring as a result of puerperal infection, erysipelas, skin infection, paronychia, tonsillitis or chronic tonsillar disease, pyorrhœa alveolaris, dental caries, alveolar abscess bone and joint infection, appendicitis, cholecystitis, cholangitis; gastro-intestinal ulceration, prostatic abscess, ischiorectal abscess, kidney abscess, cystitis, nasal and sinus suppuration, otitis, laryngeal and tracheal disease, bronchiectasis, etc.; also debilitating constitutional diseases, such as gout, diabetes Bright's diseases, and cancer; and chronicvalvular sclerosis, in which the valves are liable to recurrent attacks of acute inflammation.

Treatment.—Absolute rest in bed in a well-ventilated room is of the first importance. The slightest exertion on the part of the patient, even raising the head from the pillow, should be prohibited. The bed-pan and urinal should, of course, be employed, and the patient should be fed with a spoon. Recumbency should be continued for at least a month after the fever has subsided, and longer if any cardiac disturbance is present. Rest and quiet should be observed for at least three months from the beginning of the fever (Caton; Osler) Codeine may be given for restlessness. The bowels should be moved daily; calomel is recommended both as a laxative and antiphlogistic. A concentrated liquid or soft diet should be administered in small amounts every three hours during the period of pyrexia (milk, at least 3 pints in twenty-four hours, 3 or more eggs, meat juice) and cream of tartar lemonade (see Part 11) should be given freely. After the fever has subsided, however, fluids should be restricted to two pints a day. The mouth should be kept clean. An ice-bag should be applied over a thin piece of flannel more or less continuously, for the purpose of quieting the heart, relieving palpitation and cardiac distress, and preventing pericarditis. Counter-irritants may be employed in the form of mustard poultices, belladona plaster, or tincture of iodine. In early cases "when the heart beats fast and strong," tincture of aconite may be of service for the purpose of quieting the heart and reducing the blood pressure. Strychnine is advised, gr. $\frac{1}{30}$ to $\frac{1}{20}$ t.i.d. Tepid sponging should be employed for fever. For heart-failure administer hypodermically brandy, whiskey, camphor, ether, or strychnine (for drug formulæ, etc., see Part 11).

In rheumatic fever and chorea prescribe salicylates and alkalies (see Rheumatic

Fever). Search for a possible portal or focus of infection.

During convalescence it is advised that potassium iodide be administered in moderate dosage—gr. v, well diluted, t.i.d. —for many months with the object of preventing or lessening sclerosis. For anæmia and cardiac asthenia during convalescence, employ iron or arsenic (see Anæmia), and strychnine, and a nutritious diet composed largely of milk, eggs, and green vegetables.

℞ Ferri et ammon ii citratis..... gr. v-x
Tincturæ nucis vomicæ..... ♏viiss
Tincturæ calumbæ..... ℥i
Aquæ pimentæ, q.s., ad..... ℥i
M. Sig.—Ounce t.id. (Allbutt.)

After a prolonged period of recumbency, gradually get the patient up, first allowing extra pillows, and so on, until the patient is up in chair, and later walking. Rapid pulse, precordial pain or distress, fatigue, palpitation, or breathlessness should be strictly avoided.

The malignant (ulcerative) or septicopyemic cases should be treated as such (see Septico-Pyemia). Search for the portal of entry of the infection, make a blood culture, and employ an antibacterial serum corresponding to the organism found. Of antistreptococcic serum (univalent or polyvalent), administer 10 c.c. subcutaneously or 15 c.c. per sectum, daily, for three or four days, (smaller doses, *e. g.*, 2 c.c., if an increase of the symptoms and fever are produced), then wait several days before resuming the serum (F. W. Price). Employ antipneumococcus serum in full doses for pneumococcus septicæmia (see Part 11).

The injection of vaccines or dead microorganisms in cases in which the blood is already teeming with living organisms, does not seem altogether rational. If vaccines are given, start with a small dose and proceed cautiously according to the temperature and symptoms; for instance, according to F. W. Price, begin with 2 to 5 millions of streptococci, or 50 to 100 millions of staphylococci, and repeat the dose after three to five days, at the same time closely watching the effects to see that the patient is not made worse. Says Billings, however, "Vaccines, even auto genous, are of no value in malignant endocarditis; based upon personal experience (my opinion is that vaccines are harmful agents in the management of malignant endocarditis."

The following antibacterial agents may possibly be of some aid in combating the infection, namely, collargol, unguentum Crede, nuclein, quinine hydrochloride (gr. viiss, in capsule, twice daily), arsenic, and antipyrine. Malignant endocarditis, however, is almost invariably fatal.

Endocarditis, Chronic; Chronic Valvular Heart Disease.—See Stage of Compensation under Cardiac Insufficiency.

Endocrinology.—See Acromegaly, Addison's Disease, Adiposis Dolorosa, Cretinism, Debility, Diabetes Insipidus, Diabetes Mellitus, Exophthalmic Goitre, Hypothyroidism Infantilism, Lymphatism, Myxœdema, Obesity, Polyuria, Tetany, Thymus Enlargement Thyroid Enlargement, Part 1. Impotence, Part 3. Amenorrhœa, Part 2. Part 11 gives the endocrine drugs.

Enlargement of the Gall-Bladder.—See Gall-Bladder Enlargement.

Enlargement of the Head.—See Head Enlargement.

Enlargement of the Thyroid Gland.—See Thyroid Enlargement.

Enteralgia; Intestinal Neuralgia.—Gr. ἔντερον intestine + ἄλγος pain. **Causes.**—Constipation; excessive eating; improper food; excessive drinking of iced beverages; urticaria or angioneurotic œdema; plumbism; anæmia; neurasthenia; hysteria; multiple nuritis; neuralgia; tabes, and other organic spinal diseases; displacement of the coccyx.

For other causes of abdominal pain, see Pain.

Enteric Fever.—See Typhoid Fever.

Enteritis.—Gr. ἔντερον intestine + -ιτις inflammation. Enteritis, or intestinal inflammation, here includes simple ileitis, entero- or ilio-colitis, colitis, sigmoiditis, proctitis, intestinal ulcer, and cholera nostras or morbus. Membranous enteritis is considered under the caption, Colitis, Mucus. Cholera infantum and inflammatory diarrhœa in young children are considered under Diarrhœa in Bottle-Fed Infants and in Early Childhood. The dysenteries, Asiatic cholera, typhoid fever, etc., are considered under their respective headings (see Diarrhœa, for all its causes). Here are considered only the simple inflammatory diarrhœas of adults.

A. Enteritis Acute.—The onset is usually acute, with vomiting. Soon ther follow gurgling noises or borborygmi, colicky pains, abdominal distention and tenderness, diarrhœa thirst, coated tongue, nnd anorexia, perhaps thirst, coated tongue, and anorexia, perhaps fever, rarely constipation. In colitis, mucus and often blood are present in the stools. The occurrence of tenesmus indicates involvement of the sigmoid or rectum. Cholera morbus or nostras is an old name given to a very severe acute enteritis of sudden onset with severe abdominal pain, vomiting and prostration.

Causes of Acute Enteritis.—Tainted and poisonous foods, especially milk, buttermilk, fish, shellfish, cheese, sour potatoes, and fresh cucumbers; irritating foods, especially raw fruits and coarse vegetables; toadstool poisoning; mineral poisons; lead, mer-

cury, copper, arsenic, etc.; chilling of the body; cold drinks; septic conditions of the nose, mouth, or pharynx; intestinal worms (*q.v.*); uræmia; extensive cutaneous burns; portal obstruction due to hepatic, cardiac, or pulmonary disease; infectious diseases; typhoid fever, cholera, dysentery, tuberculosis, pneumonia, the exanthemata, diphtheria, erysipelas, septico-pyæmia, varioloid, anthrax, etc. (see Diarrhœa, for its various causes).

The Prognosis in simple acute catarrhal enteritis is usually favorable. Ordinarily the attack lasts from two to ten days.

Treatment of Acute Intestinal Catarrh.—Put the patient to bed, and administer a dose of castor oil, one or two tablespoonfuls, or calomel, gr. ii-v in a single dose, or in divided doses, followed by a saline. For vomiting let the patient sip ice-cold soda water (see also Vomiting). Apply heat to the abdomen to relieve pain, quiet peristalsis, and promote healing. For the relief of distention apply hot turpentine stupes, i.e., flannel wrung out of steaming hot water containing a teaspoonful of turpentine to the quart covered with dry flannel, these alternating with plain hot stupes. For severe pain, morphine may be required, gr. ⅛ to ¼, hypodermically; or laudanum, gtt. x-xv, by mouth or rectum; or one of the following formulæ

℞ Chloroformi..... ʒi (♏ii per dose)
Morphinæ acetatis.. gr. iss (gr. 1/20 per dose)
Olei anisi..... (gt. ⅓ per dose)
Olei menthæ piperitæ, aa..... gtt. x (gt. ⅓ per dose)
Syrupi acaciæ..... ʒii
Aquæ camphoræ, q.s., ad..... ʒii
M. Sig.—Teaspoonful in ice-water, p. r. n. (Edwards.)

Cohnheim strictly forbids opium because it paralyzes peristalsis, and gives belladonna instead:

℞ Spiritus menthæ piperitæ ..... ♏lxxx (about ♏v per dose)
Tincturæ belladonnæ foliorum..... ʒiiss (about ♏x per dose)
Tincturæ valerianæ ʒiv (about ♏xvi per dose)
M. Sig.—Thirty drops in a cup of hot water or fennel tea, t.i.d. (Cohnheim.)

Should symptoms of collapse occur, administer morphine hypodermically, together with strychnine, gr. 1/20, or camphor, gr. i-ii, in sterile oil or ether, ♏xv, give hot drinks containing brandy or whiskey, and make hot applications to the abdomen.

Withhold all food for from 24 to 48 hours (unless the patient is very delicate, when broths and albumen or barley water may be given); then allow small quantities of albumen water, barley water, sweetened arrow-root water, beef tea or hot broth free from fat; no milk or carbonated beverages. As the condition improves, add broths containing the yolk of an egg, meat juice, meat jellies, rice gruel, boiled milk, milk puddings, junket, zweiback or crackers, blueberry or blackberry wine. Restrict the diet to liquids and soft foods for several days after the diarrhœa has ceased.

If the diarrhœa shows no tendency to abate following the initial cleansing of the bowels, give large doses of bismuth subnitrate, or tincture of kino, or tincture of catechu, or tannalbin, or tannigen, or tannoform or silver nitrate, or lead subacetate, or copper sulphate; with or without paregoric, laudanum or Dover's powder (for drug formulæ see Part 11)

℞ Bismuthi subnitra tis. ʒiv (ʒ ss-i per dose)
Sulphuris precipitati.. gr. viii (gr. i-ii per dose)
Mucilaginis acaciæ... ʒii
Aquæ, q.s., ad..... ʒiv
M. Sig.—Shake well, and take one or two tablespoonfuls every four hours.

℞ Tannigen... 4.00 gm. or ʒi (gr. v per dose)
Bismuthi subgallatis... 8.00 gm. or ʒii (gr. x per dose)
Salol..... 1.55 gm. or gr. xxiv (gr. ii per dose)
Extracti opii (denarcotized) ..... 0.20 gm. or gr. iii (gr. ¼ per dose)
M. et div. in caps. 12.
Sig.—One capsule t.i.d. (Hemmeter.)

For the troublesome tenesmus that accompanies sigmoid and rectal involvement, inject cool water, followed, if necessary, by an enema of thin starch solution, 2 or 3 ounces, containing laudanum, 15 to 20 drops, which may be repeated every six hours, if required.

In protracted cases one may employ colonic enemas of normal saline solution, ʒi to the pint, or ichthyol, ʒi to the quart; or creolin, ʒi to the quart; or argyrol, ʒi to the quart; or tannic acid, gr. xv to the quart; or a saturated aqueous solution of thymol.

Employ olive oil enemata for subsequent constipation.

B. Enteritis Chronica.—Diarrhœa, either continuous or intermittent, is the chief symptom. Sometimes constipation alternates with diarrhœa. The stools usually contain mucus; always, if the large bowel is involved, when the stools are also often bloodtinged. Abdominal distention is usually present, with abdominal discomfort and tenderness, perhaps colic. The tenderness may be localized in ulcer. Blood in the stools suggests ulceration or the presence of polypi. Tenesmus indicates involvement of the sigmoid or rectum.

Causes of Chronic Enteritis.—Acute enteritis; dysentery (*q.v.*); amyloid disease of the intestines due to chronic suppuration, tuberculosis, syphilis, or cachexia; intestinal worms (*q.v.*); cancer (*q.v.*); distomiasis (*q.v.*); intestinal tuberculosis (*q.v.*); intestinal obstruction; diverticulitis (*q.v.*); tropical sprue or psilosis (*q.v.*); chronic gastritis; septic

conditions of the nose, mouth, or pharynx (pyorrhœa, etc.); chronic nephritis; Addison's disease; anæmia; intestinal ulceration, due to the following causes, viz., stercoral accumulations, tuberculosis (ulcers specific or not), syphilis (ulcers specific or not), gout, scurvy, leukæmia, Hodgkin's disease, cutaneous, burns, uræmia, mercury, arsenic, antimony, alcoholism, cancer, amyloid disease, diphtheria, varioloid, leprosy, pellagra, dysentery, typhoid fever, anthrax, chronic passive congestion due to heart, liver, lung, or kidney disease, and embolism or thrombosis (occurring in ulcerative endocarditis or septicupyæmia, erysipelas, chronic valvular heart disease, arteriosclerosis, local abscess, multiple neuritis).

Treatment of Chronic Intestinal Catarrh.—Several years may be required for a cure. Enjoin rest in the reclining posture, especially for an hour or longer after meals, with, in mild cases, occasional moderate exercise. Chilling of the body surface should be guarded against; woolen underwear should be worn, warm stockings, and a flannel abdominal band. An abundance of fresh air day and night is of importance.

The diet should consist of liquid, soft, or finely divided food leaving as little residue as possible, and served in small amounts at regular intervals—every three or four hours; beef juice, bovinine, somatose, peptonoids, scraped beef or mutton, chopped raw beef, calves' brains, sweetbreads, meat jellies, non-oily fish, egg albumen, milk (boiled or peptonized, see Part 11, or diluted with lime water) koumyss, milk soup, bouillon with eggs and rice, thoroughly cooked and strained cereal gruels, *e.g.* farina, rice, barley, and arrow-root, sago, tapioca, macaroni, potato puree, stale bread, toast, crackers, zweiback. Avoid ice-cold drinks, carbonated beverages, sweet drinks, lemonade, acids, coffee, fruits, coarse vegetables, legumes, dark breads, oatmeal, fried foods, nuts, salted meats, fat, sausage, pork, veal, goose, duck, shellfish, salmon, mackerel, herring, gravies, cheese, pastry.

Diastase or taka-diastase may be prescribed as an aid to carbohydrate digestion. Watch the stools for undigested curds when milk is being taken.

An occasional dose of castor oil, one or two tablespoonfuls, or calomel, gr. ii-v, or liquid paraffin, ½ to 3 ounces a day, or effervescent citrate of magnesia, ʒ vi-xx, may be of service.

Drugs are of secondary value, and should be used with discrimination; bismuth subsalicylate or subnitrate; betanaphthol; tannalbin (preferred by Ortner to all other astringents); tannopin; tannigen; tannoform; salol; calomel (see Part 11). These drugs are best administered in gelatin capsules hardened with formalin (glutoid capsules, No. 2 or 3 of hardness) to prevent liberation in the stomach. Blackberry brandy and huckleberry wine are good astringents. Opium preparations should be avoided.

When the large bowel is involved, give daily high injections of warm normal saline solution (ʒi ad Oi) and astringents, *e.g.*, silver nitrate, 1:5000 to 1:1000, washed out by normal saline solution; quinine, 1:5000; fluid extract of hamamelis, 1:125 of normal saline solution; quinine, 1:5000; fluid extract of hamamelis, 1:125 of normal saline solution; ichthyol, ʒi to the quart; creolin, ʒi to the quart; salicylic acid, 1 per cent.; lead acetate, 1 per cent.; copper sulphate, 1 per cent.; zinc sulphate, 1 per cent.; tannin, gr. xv-ʒi to the quart; tannin, one teaspoonful, and starch, one tablespoonful to the quart of hot water (Cohnheim); saturated aqueous solution of thymol; boric acid, ʒi to the pint. The fluid should be introduced slowly (about two quarts at each injection), with the hips elevated, and should be allowed to remain in the bowel as long as possible, gradually up to half an hour, if possible. The silver nitrate injections are very painful.

Ionic medication (*q.v.*) is recommended. The bowel is first washed out, following which, 1½ pints of a 0.1 per cent. solution of silver nitrate or 4 per cent. zinc sulphate are introduced through a rectal tube containing a copper wire which is attached to the positive pole of a galvanic battery. Large negative electrodes are placed on the back and abdomen. A current of 15 to 20 milliampéres is very gradually (to avoid shock) applied, and allowed to act for ten to fifteen minutes. This is repeated, at first twice a week, and later once a week. The solution should be washed out after each treatment.

For distressing tenesmus, inject thin starch solution, ʒii, containing laudanum, gtt. xv-xxx.

Ulcers which can be reached through a proctoscope or sigmoidoscope should be touched with a strong solution of silver nitrate. The enteroscope should be used with caution for fear of causing a perforation. In making an enteroscopic examination, one may choose between the left lateral or Sim's position, the knee-chest position, Mathew's and Hanes' inverted position, using their special table, and the exaggerated lithotomy position. The bladder and bowels should first be emptied. Gant describes the procedure with the patient in the knee-chest posture, as follows; "The proctoscope or sigprotoscope or sigmoidoscope is oiled and introduced into the rectum, and directed downward and forward until it passes through the

anal canal—about two inches. It is then pointed upward and backward until the promonotory of the sacrum is reached, when it is again directed downward and forward over the upper rectal valve and into the sigmoid flexure. The obturator is then removed and the air permitted to rush in and dilate the bowel. When this has been accomplished, the sigmoid is examined; and as the instrument is slowly withdrawn a perfect view of every part of the rectum can be obtained. When the air does not dilate the sigmoid flexure, a pneumatic sigmoidoscope should be introduced, with the obturator in place, until the middle valve has been passed. The obturator is then removed, and the rectum and bowel higher up are inflated and studied step by step, by pressing the bulb from time to time, as the instrument is passed higher up."

In obstinate cases of colitis, the large bowel may be irrigated daily, or even twice daily, through a cæcal or appendicular fistula, until all traces of pus or blood have disappeared from the stools; or, according to A. F. Herz, until two or three months after a sigmoidoscopic examination has shown that all ulceration has disappeared. Use warm water for the irrigations and argyrol or protargol, 0.5 per cent., only if need be. Remember that prolonged local treatment, continued for several months, with irritating astringents, may in itself produce a permanent catarrhal colitis. To prevent recurrence, keep the patient in bed for four weeks after the disappearance of blood from the stools; continue the soft diet, which leaves no residue, for three months after no ulceration can be seen with the sigmoidoscope, and keep the bowels soft for six months, using liquid paraffin (Part 11), if need be (A. F. Hertz).

Mummery urges early operative treat ment of ulcerative colitis. He says; "There is only one satisfactory way of treating cases of ulcerative colitis, and that is by immediate operation." He advises leaving the fistula open for a full year after all symptoms have disappeared, so that a possible relapse may be easily dealt with. Where hard scybala are passed frequently, give olive oil per mouth and colon.

Enterocolitis.—See Enteritis.

Enterogenous Cyanosis.—Gr. ἔντερον intestine + γενναν to produce. See Cyanosis.

Enteroptosis.—See Splanchnoptosis.

Enterospasm.—Gr. ἔντερον bowel + σπασμός spasm. Spasm of the small or large bowel is either acute or chronic. Acute enterospasm is characterized by a sudden attack of intense pain, which may last a few hours or even days, and then suddenly disappear. Vomiting is often associated with the attack; and a tumor may possibly be felt at the site of the contracted gut, The symptoms suggest acute intestinal obstruction, renal colic, appendicitis, peritonitis.

The cæcum or the sigmoid is the part usually affected, and there is often an associated spasm of the sphincter ani. Constipation is present.

Chronic enterospasm is the same as spastic constipation (*q.v.*)

Causes of Acute Enterospasm.—Ulceration (see Enteritis, for causes); foreign body; fæcal impaction, irritating foods, poisons, or purgative drugs; plumbism; neighboring inflammation; gastric and intestinal indigestion (hyperacidity, etc.); mucous colitis; organic disease of the cerebrospinal axis.

Treatment of Acute Enterospasm.—Employ hypodermic injections of morphine and atropine, hot abdominal compresses, hot baths, and hot normal saline (ʒi ad Oi) enemata, for the purpose of relaxing the spasm.

Enuresis; Incontinence of Urine; Bed-wetting.—Gr. ἐνουρεῖν to void urine. See Male. Genito-Urinary Disease, Part 3, and Gynæcology, Part 2.

Eosinophilia.—Eosin, from Gr. ἠώς dawn, + φιλεῖν to love. The normal number of eosinophiles per cmm. of blood is 100 to 200 (upper limit of normal, 500).

Causes of Eosinophilia.—Childhood; splenomyelogenous leukæmia; sarcoma of bone-marrow; osteomyelitis; osteomalacia; perhaps chlorosis; secondary anæmias, especially those due to parasites; splenectomy; chronic splenic tumor; bronchial asthma; emphysema; many skin diseases (pemphigus, eczema, psoriasis, urticaria, purpura, scleroderma, lupus, leprosy, herpes zoster, etc.); gout; scarlet fever; malaria; acute rheumatism; ovarian disease, excepting cancer; syphilis; parasitic infections (trichinosis, uncinariasis, oxyuriasis, filariasis, hydatid disease, Bilharziasis, trypanosomiasis, most of the intestinal worms, etc.)

For the technique of preparing and staining smears, and of making a differential count, see under Blood Examination.

Ephemeral Fever.—Gr. ἐπί for + ἡμέρα day. See Febricula.

Epidemic Catarrhal Jaundice.—See Jaundice, Infectious.

Cerebrospinal Meningitis.—See Cerebrospinal Fever.

Encephalitis.—See under Encephalitis Acuta.

Hæmoglobinuria.—See Hæmoglobinuria.

Parotitis.—See Mumps.

Epigastric Pain.—See Pain.

Epilepsy.—Gr. ἐπιλῆψία seizure. Essential or idiopathic epilepsy is a functional nervous affection, characterized by irregularly recur-

ring, sudden, transient attacks of unconsciousness with or without convulsions.

Sometimes a rapid succession of convulsions occurs, with continuous loss of consciousness, elevation of temperature, rapid pulse and respiration, and often a fatal termination due to heart exhaustion and pulmonary œdema (status epilepticus). Some epileptics are subject to periods of mental disturbance or insanity.

Etiology.—An important cause of epilepsy in infancy, during which the nervous system is particularly susceptible to permanent damage as a result of adverse influences, such as improper feeding, bad hygiene, rickets, infectious fevers, trauma, etc.

Congenital weakness or nervous instability due to hereditary causes, *e.g.*, syphilis alcoholism, hysteria, epilepsy, insanity, neuralgia etc., in the forebears, predisposes to epilepsy.

The disease is rarely caused by reflex irritation, *e.g.*, eyestrain, phimosis, adenoids, polypi, foreign body in ear or nose, intestinal worms, dentition, irritation of a cicatrix, undescended testis, menstruation, shock, etc.

Epilepsy beginning in adult life is usually due to a local lesion, particularly syphilis. See Convulsions, for all the latter's causes.

Epileptic seizures which bear a time relation to puberty, menstruation, or the menopause, may be due to hypothyroidism (*q.v.*).

Prognosis.—This is usually unfavorable as to cure, but judicious treatment is often followed by lessening of the seizures. The latter sometimes cease spontaneously.

Treatment.—While the fundamental cause of idiopathic epilepsy is altogether unknown, still it is well known that the tendency to seizures is much diminished ifall possible sources of irritation are removed, and the patient is made to lead a well-regulated hygienic life. Therefore, when an epileptic presents himself for treatment, explain to him that while you cannot promise a cure, nevertheless, by the correction of all existing remediable defects, and by correct living, he may hope so to strengthen his nervous stability (an inherited or acquired nervous instability may, after all. be the real primary cause of epilepsy), as to diminish materially the frequency of his seizures, with even the possibility of a cure.

Make a thorough physical examination of every organ and function of the body, and correct, if possible, all defects or deficiencies. Then give the patient the following instructions; Lead as sane and normal a life as possible, refrain from mental and physical overwork and worry; observe regular hours of sleeping and eating; breathe fresh pure air day and night; bathe the whole body regularly, always an hour before taking food, with warm water followed by a cool douche; cleanse the teeth with castile soap, brush, and warm water, before meals, or before breakfast; keep the bowels regular; take daily exercise in the open air, preferably in the form of some agreeable manual employment, such as gardening; eat light and simple, but nutritious food, chiefly vegetables, with a glass of water at least a half hour before each meal; do not work or bathe immediately before or after eating; do not eat before retiring abstain from alcohol, tea, coffee, and tobacco In other words, forcibly impress upon him, if you will, that it seems quite evident that his affliction is primarily an inherited or acquired nervous instability, and that he should endeavor, with unyielding purpose and cheerful indifference as to results, to earn the great credit of overcoming or of rising above handicap by a rigid adherence to correct living.

I do not advocate the routine administration of bromides in all cases. Where an epileptic has but one fit a month, it is obviously irrational to keep his nervous system continuously depressed for the purpose of preventing this occasional seizure. Where the seizure can be foretold, then a dose of 20 to 30 grs. of sodium or potassium bromide, well diluted and administered one or two hours before the expected fit, may be of real service.

Those who advocate the bromide treatment give it continuously, and for two or three years after the fits have ceased. It should be withdrawn extremely gradually, otherwise there is great danger of the occurrence of status epilepticus. Begin with gr. v of sodium bromide, t.i.d., well diluted in water, milk, or best an alkaline carbonated water, and increase the dose to 10 to 15 to 30 grains, t.i.d. (no more than 30 grs.).

℞ Sodii bromidi..... ʒv (gr. v per teaspoonful)
Aquæ..... ʒviii
M. Sig.—One teaspoonful (up to six teaspoonfuls), well diluted, t.i.d.

Bromism should be avoided. Its symptoms are mental torpor, dyspepsia, and acne. Arsenic, in the form of Fowler's solution, gtt. ii-vi, well diluted, twice a day, after meals, may be used both as a tonic and to lessen the tendency to bromide rash. Belladonna, ♏iii-vii of the tincture, t.i.d., is recommended as an adjuvant to the bromides. Restrict salt in the food while administering bromides.

Luminal (*q.v.*) is recently highly praised.

For epilepsy associated with menstruation, prescribe thyroid extract (see Part 11) in the intermenstrual period or for two weeks preceding menstruation.

For serial convulsions, give chloral, gr. xlv, well diluted, per rectum, with or without so-

dium bromide, gr. xxx-xlv, and repeat the dose after two hours, if necessary. Hyoscine hydrobromate is also of service, gr. $\frac{1}{100}$ to $\frac{1}{50}$ hypodermically. Sustain the heart, control the fever by means of cool sponging, wet packs, and an ice-bag to the head, and feed the patient per rectum (see Rectal Feeding.)

Owing to the common mental deficiency of the epileptic, and also for humane and economic reasons with many intelligent patients institutional care and treatment is often desirable.

Epiphysitis.—Gr. ἐπί upon + φύειν to grow + -ιτις inflammation. See Osteomyelitis.

Epistaxis.—Gr. ἐπίσταξις nosebleed. See Nose Diseases, Part 8.

Epuliss.—Gr. ἐπί on + οὖλον gum. A general term applied to various soft tumors (sarcoma fibroma, granuloma, angioma) arising in the mouth from the jawbone or gum.

Equinia.—L. *èquus*, horse. See Skin Diseases, Part 5.

Eructations, Acid.—L. *eructáre*, to belch. See Hyperacidity.

Eructations, Nervous; Eructatio Nervosa.—The noisy belching of swallowed air.

Etiology.—Overwork; worry; neurasthenia; hysteria; gastritis; gastroptosis; reflex influences from the genito-urinary system, intestines, heart, etc. See Dyspepsia, Nervous.

Treatment.—Attend to the cause. The bromides, valerian, and belladonna may be of service (see Part 11). Penzoldt advises breathing through the open mouth for one-half hour two or three times a day; a cork may be placed between the teeth (Mathieu). Try sharp pressure against the epigastrium (Cohnheim). Ortner praises sulphur iodid, gr. $\frac{3}{4}$ to $1\frac{1}{2}$, in capsules, after meals, for hysterical eructations.

Erysipelas.—Gr. ἐρυθρός red + πέλλα skin. See Skin Diseases, Part 5.

Erythræmia.—See Polycythæmia Vera.

Erythromelalgia.—Gr. ἐρυθρός red + μέλος limb + ἄλγος pain. See Skin Diseases, Part 5.

Esophagus.—See Œsophagus.

Exophthalmic Goitre; Hyperthyroidism.—Gr. ἐξ out + ὀφθαλμός eye; F. goitre; Gr. ὑπέρ over. A usually chronic affection, occurring mostly in women, characterized by tachycardia, palpitations, shortness of breath forcible throbbing of the arteries, flushings, usually increased perspiration, nervousness, irritability, insomnia, a fine tremor, muscular weakness, usually some enlargement of the thyroid gland, usually exophthalmos, anæmia, emaciation, often attacks of diarrhœa with or without vomiting, and increased basal metabolism (*q.v.*).

Spontaneous remissions and intermissions occur, and the patient may live many years. Dock says, "About 30 per cent. recover almost completely." Forchheimer, Mayo, and Kocher affirm that 70 to 90 per cent. of all cases are cured by medical treatment. Mental and physical rest, and suggestion such as prescribing a medicine and declaring that it will cure, may even effect a cure.

Etiology.—Provocative causes are emotional shock, nervous strain, worry, overexertion, and acute or chronic infections.

Treatment.—Mental and physical rest are of the very first importance; at first rest in bed, and later, as improvement occurs, very moderate exercise. In very nervous cases with a bad heart, the rest must be absolute; the Weir Mitchell treatment being here indicated (see Neurasthenia). There should be plenty of fresh air day and night. The diet should be plain, bland, and wholesome; no condiments, spices, tea, coffee, chocolate, alcohol, or tobacco.

To quiet the heart, apply the ice-bag intermittently, and administer, if necessary, tincture of strophanthus, or fluid extract of veratrum viride, or tincture of aconite (for drugs see Part 11). The latter, says Croftan, is the "best remedy for palpitation and tachycardia" with care it may be continued indefinitely. It is also well recommended by Sequin.

Where the nervous symptoms are marked, one may prescribe sodium bromide, or camphor monobromate, or zinc valerianate. For insomnia employ the warm bath and perhaps a hot drink at bed time, with perhaps a single large dose of sodium bromide (see also Insomnia). For great cerebral excitement give hyoscine hydrobromide, gr. $\frac{1}{100}$, hypodermically, together with sodium bromide or valerian.

For gastro-intestinal disturbances prescribe sodium phosphate and restricted diet, followed, if required, by bismuth. Give no morphine.

For anæmia prescribe iron and arsenic (see Anæmia).

Search for and eradicate any possible source of infection or intoxication (in the pelvis, gastro-intestinal tract, gall-bladder, appendix, mouth, throat, tonsils, nose, sinuses, ears, joints, etc.).

The following measures are well recommended for curative purposes

1. Sodium phosphate, ℥ss-i, in aqueous solution, two or three times a day.

2. Belladonna.

3. Quinine hydrobromate (vasuconstrictor), gr. v in gelatin-coated pills, four times a day. If, after 48 hours, the tachycardia does not disappear, add to each pill, ergotin, gr. i. Continue this medication daily until all symptoms have disappeared. It may be continued for years without harm. Forchheimer has employed this mode of

treatment for over twenty-five years, with almost uniform success. He says, "If symptoms do not return in two weeks after the withdrawal of the quinine the patient may be considered cured."

4. Galvanism (see Medical Electricity) the anode placed at the sternal notch and the cathode at the angle of the jaw, no more than three milliampères for three to five minutes daily, "often acts favorably by diminishing the vascularity." (Kocher.)

5. Röntgentherapy (*q.v.*). "The entire area is covered with a chamois skin to protect from the secondary rays given out by the filters. Over this a heavy lead protector, 3 mm. thick, is placed with a hole cut in it large enough to allow the tumor to be palpated and located. Brass discs 2½ inches thick surmounted by an aluminum filter 1 mm. thick, are placed on this plate and as the filter is 1 inch below the wall of a 7-inch tube, there is a distance of 5 inches from the wall and 8½ inches from the anode to the patient. Between three and four points on Hampson's radiometer are given with a moderately soft tube to avoid too great penetration. From four to six exposures are usually required to show marked improvement."—Simpson. From six weeks to six months treatment is required (Sielmann). Knox advocates one-third pastille dose, estimated by the use of a Lovibond tintometer, through 3 mm. of aluminum and one or more layers of chamois leather or loofah sponge to protect the skin from the secondary rays given out by the filter, three times a week for a long period. The dose is given to three areas, right side of thyroid, left side, and centre of the root of the neck to include the thymus gland.

Pancoast advises a full dose of 20–X units through 3 mm. of aluminum and leather to each lobe, exposing only a part of the lobe every few days, with cross-firing if the gland is large, together with treatment of the thymus in the same way, the series of exposures to be repeated several times every three or four weeks, according to the symptoms of hyperthyroidism.

6. Radium Therapy (*q.v.*). Says Knox: "Using 100 mgrms. with 3 mm. of lead filter, twelve hours to each side of the enlarged thyroid gland should suffice to produce marked improvement. The exposures may be repeated in from three to four weeks. Several exposures at long intervals should be given after the symptoms have improved.

7. "Early operation" (partial thyroidectomy), says Kocher, "is the best treatment of thyrotoxicosis." "The operation is indicated in all cases that do not present degeneration of the heart-muscle with irregular pulse, low blood-pressure (*q.v.*), or periodical attacks of delirium cordis." In any severe case it is advisable to perform one or two preliminary ligations of the superior thyroid artery," under local anæsthesia (see Part 11: cocaine or novocaine). The danger in operating is from heart-failure, and this danger increases with the duration of the disease. Therefore, before operating, the heart should be strengthened by rest, the application of the ice-bag, and tonics, etc. Dock says: "C. H. Mayo does not operate if the pulse is above 130, or varying in force and frequency, or if there is anæmia or œdema. In such cases he has treatment with X-rays and belladonna carried out." Adrenalin compresses over the thyroid are recommended.

External Cutaneous Nerve.—See Meralgia Paræsthetica.

Popliteal Nerve.—See Sacral Plexus.

Extrasystole.—See Arrhythmia, Cardiac.

Eyeball, Motor Nerves of the.—See Motor Nerves of the Eyeball.

Eyelids, Œdema of the.—See Skin Diseases, Part 5.

Facial Hemiatrophy.—L. *fa'cies*, face; Gr. ἡμι half + ἀτροφία atrophy. A rare incurable affection, characterized by atrophy of all the tissues of one side of the face, and doubtless due to disease of the fifth nerve.

Other causes of facial asymmetry are congenital wryneck, anterior poliomyelitis, hemiplegia, lesions of the Gasserian ganglion, sympathetic nerve paralysis, scleroderma, and facial hemihypertrophy. (Osler.)

Treatment.—A plate may be fastened to the teeth, in order to round out the affected side.

Facial Nerve.—See Facial Paralysis, and Habit Spasm.

Neuralgia.—See Neuralgia.

Facial Paralysis; Bell's Palsy.—Paralysis of the facial nerve is usually due to exposure to cold or draughts, and is then of sudden onset, with herpes often associated with it. The prognosis is usually good. Recovery occurs in one or more weeks or months, even up to fifteen months, or else the paralysis is permanent.

Test the facial muscles by getting the patient to laugh, wrinkle the forehead horizontally and vertically, whistle, and close the eyes tightly.

The location of the lesion may be ascertained as follows:

1. Below the stylomastoid foramen; taste not affected.

2. Stylomastoid foramen to geniculate ganglion within the Fallopian canal; loss

of taste in the anterior two-thirds of the tongue.

3. Geniculate ganglion to pons: no loss of taste; often deafness.

4. Within the pons: no loss of taste or hearing; other nerve lesions, particularly of the sixth or abducens nerve.

5. Above the pons: no changes in the nerve or muscle electrical reactions; upper branch of the nerve supplying the orbicularis palpebrarum, frontalis, and corrugator muscles much less involved than the two lower branches; usually hemiplegia.

Etiology.—Exposure to cold or draughts; otitis media; caries of the petrous bone; diphtheria; anterior poliomyelitis; multiple neuritis; traumatism (basal fracture, compression of the head during parturition, mastoid operation); basal meningitis; affections of the medulla, pons, or higher structures (neoplasms, abscess, softening); tabes; puerperium; emotional shock; parotid gland disease; gout; diabetes; leukæmia; syphilis.

Treatment.—During the first day, apply hot fomentations or hot linseed poultices to the mastoid region, and open the bowels thoroughly by means of castor oil or calomel. On subsequent days, apply the thermocautery lightly, or small blisters (see Part 11: cantharides), or rub in the following ointment:

℞ Potassii iodidi ..... ʒss
Iodi puri ..... gr. iii
Adipis lanæ hydrosi,
Petrolati mollis, aa ..... ʒss

Sodium salicylate or aspirin is recommended in the early stages. Potassium iodine, gr. x, t.i.d., is also commonly used (for drugs see Part 11). Syphilitic cases call, of course, for specific medication. Bandage the eye in order to prevent conjunctivitis and keratitis e lagophthalmo.

After the lapse of ten or fourteen days, or when the acute inflammatory process has altogether subsided, employ galvanism—not more than 3 to 4 to 5 milliampères for five to ten minutes at intervals of one or two days; the positive pole being placed behind the ear or over the sternum, while the negative pole is used to stroke the muscles. Substitute faradism as the faradic irritability returns. More useful still than electricity to maintain the nutrition of the muscles until the nerve regenerates is massage, manual or vibratory. Voluntary muscle exercises are also to be employed. Strychnine, gr. $\frac{1}{60}$, gradually increased to gr. $\frac{1}{40}$, t.i.d., may be given after the second week.

Much improvement is not to be expected before the fourth month. If none has occurred at the end of six months, it probably will not occur at all.

In incurable cases one may consider the transplantation of the hypoglossal nerve into the facial nerve, close to its exit from the skull.

Ionic medication (*q.v.*) is recommended for facial paralysis. The active electrode is applied to the parotid region and below and behind the ear. The electrolytes used are quinine hydrochlorate, 1 per cent. solution, and sodium salicylate, 1 to 2 per cent. solution. The quinine, being kathionic, is placed at the anode; the salicylate, being anionic, at the kathode. A gradually increasing current up to 20 to 40 milliampères is employed for thirty minutes, thrice or twice a week.

Facial Spasm.—See Habit Spasm.

Fainting.—See Coma.

Family Amaurotic Idiocy.—See Amaurotic Family Idiocy.

Family Periodic Paralysis.—A rare familial affection, characterized by recurrent attacks of a flaccid paralysis involving the muscles of the trunk and extremities, sometimes other muscles, beginning suddenly and lasting several hours or days, and exhibiting a tendency to amelioration after middle life.

Treatment.—Enjoin the avoidance of all possible exciting causes, as overwork, overfeeding, exposure to cold, etc. Keep the bowels, skin, and kidneys active. Try potassium citrate in full doses (Part 11), together with copious water drinking.

Malaria is a cause of a non-familial periodic paralysis.

Family Spastic Paraplegia.—See Spastic Paralysis.

Famine Fever.—See Relapsing Fever.

Farcy.—See Equinia in Skin Diseases, Part 5.

Fatty Heart.—See Myocarditis, and Obesity.

Liver.—See Liver Enlargement.

Stools.—See Colorless Stools.

Febricula.—L. a slight, temporary fever. Febricula or ephemeral fever is merely a convenient term by which to designate a simple acute continued fever of doubtful nature but of good prognosis, which lasts from a day to several weeks, and occurs chiefly in the young. Labial herpes is commonly associated with it (febris herpetica).

Possible causes are sudden marked changes of temperature, dietary indiscretions, gastrointestinal disturbances, sewer gas or other noxious vapors, mental excitement, fatigue, and abortive or larval forms of the acute infectious diseases, *e.g.*, tonsillitis, diphtheria,

measles, scarlet fever, malaria, typhoid fever, paratyphoid or paracolon infection, central pneumonia.

Treatment.—Put the patient to bed and clean out the bowels with calomel in divided doses followed by a saline (see Part 11).

Prescribe liquid diet and water in abundance, preferably in the form of cream of tartar lemonade until the temperature has returned to normal.

For a fever of 103° F. and over, place an ice-cap to the head, and sponge the body, or employ the cool pack or gradually cooled bath.

Give salol or aspirin and phenacetin for pain and headache.

A mild fever mixture may be prescribed.

℞ Spiritus ætheris nitrosi.. ʒii (ɱiv per dose)
Potassii citratis..... ʒi (gr. ii per dose)
Liquoris ammonii acetatis..... ʒiss (ɱxxiv per dose)
Syrupi simplicis..... ʒi
Aquæ camphoræ, q.s., ad ʒiv
M. Sig.—A teaspoonful every three hours.

Fecal Impaction.—L. *fœc'es*, fæces; *impac'tio*, firmly wedged. See Intestinal Obstruction.

Feeding, Infant.—See Infant Feeding.

Rectal.—See Rectal Feeding.

Feet, Pain in the.—See Pain.

Felon; Whitlow.—Subperiosteal suppuration localized in the terminal phalanx of a finger.

Make an immediate free longitudinal incision, somewhat lateral to the median line, down to the bone. Do not wait for fluctuation. Sometimes necrotic bone must be removed.

Pack the wound lightly with dry gauze or gauze soaked in hot boric acid solution. Renew the dressing every day or less often until healing occurs.

Fetal Rickets.—See Achondroplasia.

Fetid Breath.—See Breath, Bad or Offensive.

Bronchitis.—See Fetid or Putrid Bronchitis.

Stomatitis.—See Stomatitis.

Fetor Oris.—See Breath, Bad or Offensive.

Fever.—L. *fe'bris*. According to R. C., Cabot, 90 per cent. of long continued fevers lasting two weeks or longer, occurring in the temperate zone, are due to typhoid fever, tuberculosis (pulmonary, renal, etc.), and pyogenic sepsis (puerperal infection, cervical laceration, endocarditis, erysipelas, lymphangitis, phlebitis, phlegmonous inflammation, empyema, dental sepsis, deep-seated abscesses: hepatic, cholecystic, subphrenic, mediastinal, renal, perirenal, appendicular, gastroduodenal, genito-urinary, ischio-rectal, etc.). The remaining 10 per cent. are due to influenza, infectious arthritis, rheumatic fever, acute chorea, syphilis, gonorrhœa, cirrhosis, meningitis, trichinosis, leukæmia, cancer.

Long continued fevers occurring in hot countries include malaria, Indian Kala-azar, Malta fever, and typhus fever.

The short fevers embrace the above named, and also the exanthemata, diphtheria, catarrhal fever, tonsillitis, pharyngitis, mumps, influenza, pleurisy, bronchitis, pneumonia, appendicitis, salpingitis, arthritis, sinusitis, lymphangitis, purpura, relapsing fever, yellow fever, herpes zoster, miliary fever, milk sickness, erysipelas, poliomyelitis, acute diffuse myelitis, acute febrile polyneuritis, acute gastroenteritis, acute pancreatitis, anthrax, dengue, hæmoglobinuria.

Non-infectious fevers occur in gastrointestinal disturbances, brain injuries and diseases, malignant tumors, cholelithiasis, severe anæmia, leukæmia, Hodgkin's disease, scurvy, rickets, belladonna and coal gas poisoning, movable kidney, uræmia, eclampsia, hepatic toxæmia, coma from any cause (see Coma), sunstroke, gout, exophthalmic goitre, thyroid extract in toxic doses, hysteria, nervousness, fatigue, starvation (as in the inanition or starvation fever of infants). (Chiefly from R. C. Cabot.)

In any case of obscure fever, make a searching examination for some focus of infection, not omitting the rectum and vagina.

Treatment of Fever as Such.—For the reduction of high fever (103° F. and over) the following measures are appropriate:

1. Ice-cap to the top of the head.
2. Cold sponging of the body with water at a temperature of about 80° F., or with equal parts of water and alcohol, or water and vinegar, to be continued for from ten to twenty minutes, and repeated frequently.
3. The cold pack, consisting of a sheet, wrung from water at a temperature of 100° F., over which ice is rubbed, a hot-water bottle being kept to the feet, if necessary.
4. The cold bath, at a temperature of 100° F., gradually lowered to about 80° F., and continued for from five to ten minutes.
5. Fanning the body, after moistening the skin with hot water.
6. Rectal irrigation with cool water (70° F.).

The Fever Diet.—A Daily Ration, according to Tibbles, representing about 2426 to 2836 calories:

Fresh milk	3–4 pints
Fresh raw eggs	2
Well-cooked fine oatmeal	1 ounce
Well-cooked arrowroot	1 ounce
Stale bread	3 ounces
Fresh butter	1 ounce
Sugar	2 ½ ounces
Barley water	20 ounces
Beef tea	20 ounces

Milk may be boiled or peptonized if curds appear. It may be diluted one-third with barley, lime, or soda-water. Milk puddings, custards, jelly, milk toast, junket, are appropriate foods. Water is usually allowed ad libitum, often in the form of cream of tartar lemonade (Part 11).

During convalescence add gradually to the diet, milk puddings containing eggs, eggs boiled three minutes, well-cooked cereals, vegetable purées, cauliflower, squash, spinach, potatoes, tender string beans, green peas, steamed fish (whiting, haddock, sole, plaice, cod), boiled meats, oysters, etc.

Fibrillation, Cardiac.—See Arrhythmia, Cardiac.

Fibrinous Bronchitis.—See Bronchitis, Fibrinous.

Pleurisy.—See Pleurisy.

Fibroid Heart.—L. *fib'ra*, fibre; Gr. εἶδος form. See Myocarditis.

Fibroid Phthisis.—Gr. φθίσις; φθίειν to consume. See Pulmonary Cirrhosis.

Fibrosis of the Lung.—See Pulmonary Cirrhosis.

Fibrositis.—L. *fib'ra*, fibre + -ιτις inflammation. See Myalgia.

Fifth Nerve.—See Trigeminal Nerve.

Filariasis.—L. *filamen'tum*, fine thread. Infection with the filaria sanguinis hominis, a tropical and subtropical menatode worm, comprising at least three species, the filaria Bancrofti or nocturna, the filaria loa or diurna, and the filaria perstans.

A. Of these the first is the most important. It is a cause of elephantiasis, including lymph scrotum (see Part 5, Skin Diseases), and of chylothorax (*q.v.*), chylous ascites (*q.v.*), chylous diarrhœa, lymphatic varices, chylocele (see Hydrocele, in Male Genito-Urinary Diseases, Part 3), orchitis, abscess, and hemato-chyluria (see Chyluria). The symptoms in all these affections are due to obstruction of the lymphatics by the embryo worms, ova, or adult worms. The embryos are also found in the peripheral blood, in greatest numbers at night or during sleep (they reach the general circulation only through the thoracic duct). They may be found, possibly, in the urine and chylous accumulations.

The disease is transmitted by the mosquito, both the culex and anopheles varieties. (Fig. 39.)

To make a fresh blood examination, puncture the ear, and wipe away the first few drops of blood. To the top of a drop of blood about the size of a large pinhead, touch the centre of a perfectly clean cover-glass held with pinch-forceps, and drop the cover on to a previously warmed slide. Do not press. For the technique of preparing and staining smears, see Blood Examination.

Fig. 39.—Filaria bancrofti; *Webster's Diagnostic Methods*, P. Blakiston Son & Co.

Treatment.—This is considered under Elephantiasis(Skin Diseases, Part 5), Chyluria, Ascites, Chylothorax, and Hydrocele (Male Genito-Urinary Diseases, Part 3).

Prophylaxis embraces boiling the drinking water and protection against mosquitoes.

B. The filaria loa occurs chiefly on the west coast of Africa. Its larva is like that of the filaria Bancrofti; but it is found in the blood in the daytime. It is transmitted by biting flies of the genus chrysops. The adult worm travels about in the connective tissue all over the body, producing wandering swellings or irritation (in the eyelid, conjunctiva, nose, fingers, penis, etc.).

To remove the worm, grasp the tissues with forceps and incise down to the worm; or inject bichloride of mercury, 1 : 1000 ($\frac{1}{67}$ gr. of bichloride in 1 c.c.).

Schultz recommends collargol, 1 per cent., a dessertspoonful t.i.d. for over a year; for subconjunctival filariae,a few drops instilled into the eye.

First Nerve.—See Olfactory Affections.

Fish Poisoning.—See Poisoning.

Fissure in Ano.—This painful condition is commonly the result of scratching of the anal mucous membrane by hard scybala.

Treatment.—There are three methods of treatment, but the two operative methods are the quickest and surest. Some (Abbe) favor divulsion of the sphincter ani; others (Gant, Earle) favor division of this muscle.

1. Non-operative Treatment.—Keep the parts clean with castile soap and warm water, followed by warm boric acid solution. For pain, employ hot applications, or inject hot oil, or insert a suppository containing Morphine, gr. ⅛; or cocaine, gr. ss–i; or eucaine, gr. ¼–i; or powdered stramonium; or extract of belladonna, gr. ⅕ to ⅔.

℞ Morphinæ sulphatis..... gr. ¼
Extracti belladonnæ..... gr. ss
Adipis lanæ hydrosi..... ʒi

M. Sig.—Apply after each movement, by means of a pile ointment pipe, and repeat if necessary. (Gant.)

℞ Hydrargyri chloridi mitis,
Extracti belladonnæ, aa..... ʒi
Unguenti stramonii, q.s., ad..... ʒi

M. Sig.—Apply by means of a pile pipe as often as required. (Gant.)

Keep the stools soft by means of a nightly mild pill of cascara sagrada or aloin, aided, if necessary, by olive oil, or liquid paraffin by mouth, once or twice daily (see Part 11 for drugs).

Twice or thrice weekly anæsthetize the fissure by the local application of cocaine, 4 per cent., or eucaine, 6 per cent., and apply on gauze, which is to be left in place, silver nitrate, gr. xx to the ounce, or ichthyol, 20 per cent. or pure, or balsam of Peru. Cohnheim has ichthyol applied on a cotton-wound applicator twice a day. The anal canal may be dilated by the greased finger of the patient for fifteen minutes morning and night. (Chiefly from Gant.)

Ionic medication (*q.v.*) is recommended. Use a zinc rod wrapped with lint soaked in zinc chloride solution. Employ 15 milliampères for twelve minutes, and repeat at the end of a week.

2. Divulsion of the Sphincter Ani.—Under general ether anæsthesia, dilate the anus, using first one finger, then two fingers, then both thumbs, and gently stretch the sphincter until the thumbs press upon the tubera ischii on each side. The base of the ulcer may be cauterized. Then insert an opium suppository containing extractum opii, gr. ss.

3. Division of the Sphincter Ani.—First anæsthetize the tissues by means of the local application of cocaine, 4 per cent., and the hypodermic injection of eucaine, ⅛ per cent., or cocaine 0.1 per cent., or sterile water. Gant injects the anæsthetic beneath the skin at a point one-half an inch directly behind the posterior anal commissure, and then pushes the needle forward and injects the sphincter muscle and lower posterior rectum. He then inserts the sharp-pointed blade of a pair of scissors through the skin and tissues posterior to the external sphincter for a distance of one inch, while the probe-pointed blade of the scissors is inserted into the rectum for the same distance. With one cut the skin and external sphincter are then divided. The resulting triangular-shaped wound is drained by a small piece of gauze until it heals. (Gant.)

Fistula in Ano.—L. *fis'tula*, a pipe; *anus*, anus. Fistula in ano is the sequel of an abscess situated about the rectum or anus. It is often tuberculous.

Treatment.—Before operating for fistula, open the bowels thoroughly for three days. For from five to ten days after the operation, keep the bowels completely constipated by means of an occasional opiate and light diet consisting of broth, eggs, some meat, and very little bread.

A. Complete or Externo-internal Fistula.—First dilate the sphincter ani as described above under Fissure in Ano. Then, with the index finger in the rectum, pass a grooved director through the outer opening of the fistula into the bowel, and hook up the end of the director with the finger in the rectum and bring it outside and across the anus. Then divide all the overlying tissues, at right-angles to the external sphincter muscle, with a sharp-pointed curved bistoury. If the tract of the fistula runs obliquely in reference to the external sphincter muscle, first divide the tissues overlying the external portion of the tract down to the margin of the external sphincter, then change the course of the director to a right angle with the sphincter muscle, and then divide the latter. Instead of the director, one may use probe-pointed scissors. All lateral or tributary tracts should be opened. Granulations should be gently curetted away, taking care not to penetrate the delimiting fibrous wall of the tract, and the wound then cauterized and packed with gauze.

The operation may sometimes be done under local anæsthesia, using ⅛ per cent. eucaine, but general anæsthesia is, no doubt, usually preferable.

B. Blind Internal Fistula.—Pass a director into the opening of the fistula, and then upward

or downward beneath the mucosa, according to the direction of the sinus, until the end of the sinus is reached. Then sever the overlying mucous membrane. Where the sinus is directed downward from its internal opening, and under the sphincter or skin, use Gant's angular director, and draw it downward through the sinus until it causes the skin to bulge. Bring this lower end of the director out through the skin by means of a small incision in the latter, and then hook the upper end out of the rectum by means of the finger, and sever the overlying tissues as in the operation for complete fistula.

The sphincter ani should be cut at a right angle to the course of its fibres, and the skin and mucous membrane should be prevented from growing into the gutter-like wound by packing the latter with a little strip of iodoform gauze for a week. Insert the dressings lightly and change as soon as they become soaked.

Should both sphincters be cut, a permanent incontinence is apt to follow, requiring a difficult plastic operation.

Excision of the fistulous tract is sometimes, but rarely, the operation of choice. (From Gant.)

Tuberculous fistulæ should be cauterized with the thermo-cautery after the tract has been laid open.

Ionic medication (*q.v.*) has its advocates. Use a zinc positive electrode with its point insulated by a covering of melted wax. Employ a current of about 3 milliampères, for three minutes every four days.

Fistula, Salivary.—See Salivary Fistula.

Fits.—See Convulsions.

Flat-Foot.—See Orthopædics, Part 10.

Flatulence.—L. *flatulen'tia*, distention with gas. (See Tympanites.)

Floating Kidney.—See Enteroptosis.

Fluke-Worm Disease.—See Distomiasis.

Follicular Stomatitis.—See Stomatitis.

Fontanels.—Fr. *fontanelle*, a little fountain. The larger anterior fontanel closes about the twentieth month; the posterior about the sixth week.

Causes of Delayed Closure of Fontanels and Sutures.—Rickets, hydrocephalus; hereditary syphilis; cretinism.

Causes of Bulging Fontanels.—Increased intracranial pressure (hemorrhage, meningitis, hydrocephalus, any acute febrile disease not accompanied by dyspnœa).

Causes of Depressed Fontanels.—Severe diarrhœa; wasting diseases; collapse; acute dyspnœa. (R. C. Cabot.)

Food Poisoning.—See Poisoning.

Food Values.—One gram of protein yields on combustion 4.1 calories; one gram of carbohydrate yields 4.1 calories; one gram of fat yields 9.3 calories; and one gram of alcohol yields 7 calories. A calorie represents the amount of heat required to raise the temperature of one kilogram of water one degree Centigrade.

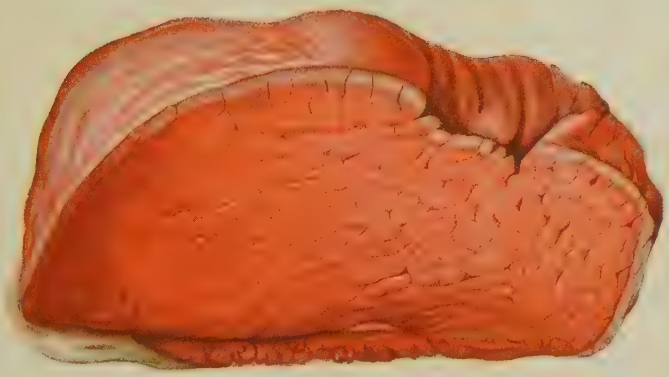
THE CALORIC REQUIREMENTS DURING TWENTY-FOUR HOURS

Age	Weight kg.	Weight lbs.	Calories per kilogram, body weight	Calories per pound, body weight	Total calories
Two years	12	26	80	36	960
Six years	20	44	70	31	1400
Twelve years	36	80	50	23	1800
Adult at rest	70	154	25–30	11–14	1750–2100
Adult at light work	70	154	35–40	16–18	2450–2800
Adult at moderate work	70	154	40–45	18–20	2800–3150
Adult at hard work	70	154	45–60	20–27	3150–4200

In old age less calories are required.

At moderate physical work the average man of 154 pounds consumes per day about 100 grams of protein, 100 grams of fat, and 400 grams of carbohydrate, or 2900 calories; but smaller amounts are usually sufficient, *e.g.*, 70 grams of protein, 100 grams of fat, and 300 grams of carbohydrate, or 2400 calories.

BEEF - FROM AN ANIMAL WITH FEVER

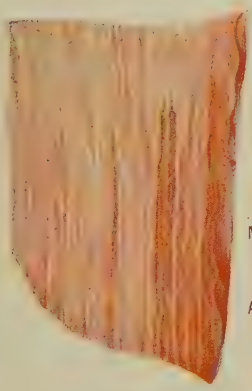


PSOROSPERMIASIS - PORK -

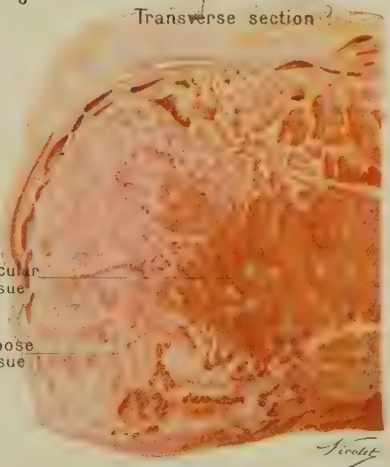
PROGRESSIVE MYOPATHY - VEAL -

Fatty meat

Longitudinal section

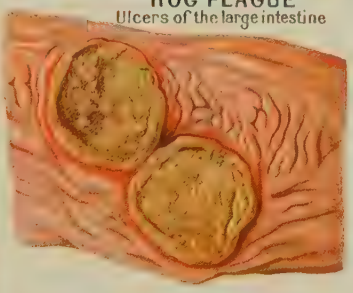


Transverse section



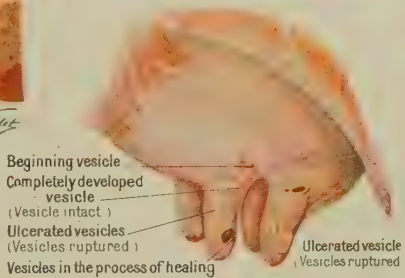
HOG PLAGUE

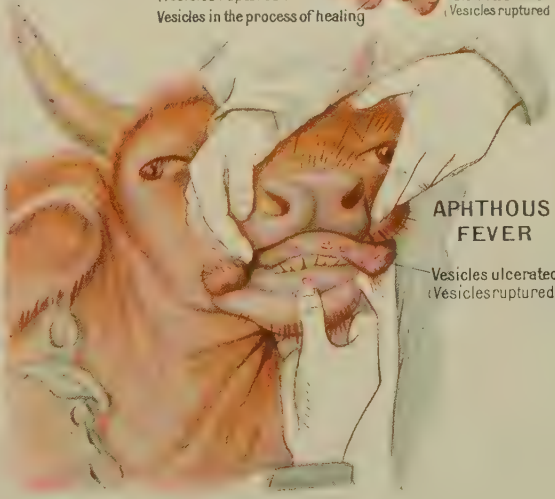
Ulcers of the large intestine



MEASLES IN PORK

APHTHOUS FEVER





WEIGHT TABLE (*Male*)

(Showing average weight for each height and age. Based on "Nylic Graphic Table." Correct to one pound.)

Age	57 Ins.	58 Ins.	59 Ins.	60 Ins.	61 Ins.	62 Ins.	63 Ins.	64 Ins.	65 Ins.	66 Ins.	67 Ins.	68 Ins.	69 Ins.	70 Ins.	71 Ins.	72 Ins.	73 Ins.
20	104	108	111	114	117	121	125	128	132	136	140	144	149	153	158	163	167
21	105	108	111	115	118	122	125	129	133	137	141	145	150	154	159	164	168
22	106	109	112	116	119	123	126	130	134	138	142	146	151	155	160	165	169
23	106	109	113	116	119	123	127	130	135	138	143	147	152	156	161	166	170
24	107	110	114	117	120	124	128	131	136	139	144	148	153	157	162	167	171
25	108	111	114	118	121	125	128	132	136	140	144	149	154	158	163	168	172
26	108	111	115	118	122	126	129	133	137	141	145	150	154	159	164	169	173
27	109	112	116	119	122	127	130	134	138	142	146	150	155	160	165	170	174
28	109	112	116	120	123	127	130	134	138	142	147	151	156	161	166	170	175
29	110	113	117	120	124	127	131	135	139	143	148	152	157	162	167	171	176
30	110	114	117	121	124	128	132	136	140	144	148	152	157	162	167	172	177
31	111	114	118	121	125	129	132	136	140	145	149	153	158	163	168	173	178
32	111	115	118	122	125	129	133	137	141	145	150	154	159	164	169	173	179
33	112	115	119	122	126	130	133	138	142	146	150	155	159	164	170	174	179
34	112	116	119	123	126	130	134	138	142	147	151	155	160	165	170	175	180
35	112	116	120	123	127	131	134	139	143	147	152	156	161	166	171	175	181
36	113	117	120	124	127	131	135	139	143	148	152	156	161	166	172	176	181
37	113	117	120	124	128	131	135	140	144	148	153	157	162	167	172	177	182
38	113	117	121	124	128	132	136	140	144	149	153	158	162	167	173	177	183
39	114	118	121	125	129	132	136	141	145	149	154	158	163	168	173	178	183
40	114	118	122	125	129	133	136	141	145	149	154	158	163	168	173	178	184
41	114	118	122	125	129	133	137	141	146	150	154	159	164	168	174	179	184
42	115	118	122	126	130	133	137	142	146	150	155	159	164	169	174	179	185
43	115	119	123	126	130	134	138	142	146	151	155	161	165	170	175	180	185
44	115	119	123	126	130	134	138	143	147	151	155	160	165	170	175	180	186
45	116	119	123	126	131	134	138	143	147	151	156	161	165	170	176	181	186
46	116	119	123	127	131	135	139	143	147	152	156	161	166	170	176	181	186
47	116	120	124	127	131	135	139	144	148	152	157	161	166	171	176	181	187
48	116	120	124	127	131	135	139	144	148	152	157	161	166	171	177	182	187
49	117	120	124	127	131	135	139	144	148	153	157	162	167	171	177	182	187
50	117	120	124	127	132	136	140	144	148	153	157	162	167	172	177	182	188
51	117	120	124	128	132	136	140	145	149	153	158	162	167	172	178	182	188
52	117	121	125	128	132	136	140	145	149	153	158	162	167	172	178	183	188
53	117	121	125	128	132	136	140	145	149	154	158	163	168	172	178	183	188
54	118	121	125	128	132	136	140	145	149	154	158	163	168	173	178	183	188
55	118	121	125	128	132	136	140	145	149	154	158	163	168	173	178	183	188

WEIGHT TABLE (*Female*)

(Showing average weight for each height and age. Based on "Nylic Graphic Table.")

Age	57 Ins.	58 Ins.	59 Ins.	60 Ins.	61 Ins.	62 Ins.	63 Ins.	64 Ins.	65 Ins.	66 Ins.	67 Ins.	68 Ins.	69 Ins.	70 Ins.	71 Ins.	72 Ins.	73 Ins.
20	100	103	106	109	113	116	120	123	127	130	134	138	142	147	152	156	161
21	101	104	107	110	114	117	120	124	127	131	135	139	143	148	152	157	162
22	101	105	107	110	114	118	121	124	128	132	136	140	144	149	153	158	162
23	102	105	108	111	115	118	122	125	128	132	137	140	145	149	154	158	163
24	102	106	108	111	115	119	122	126	129	133	137	141	145	150	155	159	164
25	103	106	109	112	116	119	123	126	130	134	138	142	146	151	155	160	165
26	103	107	110	113	117	120	124	127	131	134	139	143	147	151	156	161	166
27	104	107	110	113	117	121	124	128	131	135	139	144	148	152	157	162	166
28	104	108	111	114	118	121	125	128	132	136	140	144	149	153	158	162	167
29	105	108	111	114	118	122	126	129	133	136	141	145	149	154	158	163	168
30	105	109	112	115	119	123	126	129	133	137	141	146	150	154	159	164	169
31	106	109	112	116	119	123	127	130	134	138	142	146	151	155	160	165	170
32	106	110	113	116	120	124	127	131	135	138	143	147	151	156	161	166	170
33	107	110	113	117	120	124	128	131	135	139	143	148	152	156	162	166	171

WEIGHT TABLE (*Female*).—*Continued*

(Showing average weight for height and age. Based on "Nylic Graphic Table.")

Age	57 Ins.	58 Ins.	59 Ins.	60 Ins.	61 Ins.	62 Ins.	63 Ins.	64 Ins.	65 Ins.	66 Ins.	67 Ins.	68 Ins.	69 Ins.	70 Ins.	71 Ins.	72 Ins.	73 Ins.
34	107	110	114	117	121	125	128	132	136	140	144	149	153	157	162	167	172
35	108	111	115	118	122	125	129	133	137	140	145	150	154	158	163	168	173
36	108	112	115	119	122	126	130	133	137	141	146	150	154	159	164	169	174
37	109	112	116	119	123	126	130	134	138	142	146	151	155	160	165	170	175
38	109	113	116	120	123	127	131	135	139	142	147	152	156	161	166	170	175
39	110	113	117	120	124	128	131	135	139	143	148	153	157	161	166	171	176
40	110	114	117	121	124	128	132	135	140	144	148	153	157	162	167	172	177
41	111	114	118	121	125	129	132	136	140	145	149	154	158	163	168	173	178
42	111	115	118	122	125	129	133	137	141	145	150	155	159	163	169	173	179
43	112	115	119	122	126	130	134	138	142	146	150	156	159	164	169	174	179
44	112	116	119	123	127	130	134	138	142	147	151	156	160	165	170	175	180
45	113	116	120	123	127	131	135	139	143	147	152	157	161	166	171	175	181
46	113	117	120	124	128	131	136	139	143	148	152	157	162	166	171	176	182
47	114	117	121	124	128	132	136	140	144	149	153	158	162	167	172	177	182
48	114	118	121	125	129	133	137	141	144	149	154	159	163	168	173	178	183
49	115	118	122	125	129	133	138	141	145	150	154	159	164	168	174	179	184
50	115	119	122	126	130	134	138	142	146	150	155	160	164	169	174	179	185
51	116	119	123	126	130	134	139	143	147	151	156	161	165	170	175	180	186
52	116	120	123	127	131	135	139	143	147	152	156	161	166	170	176	181	186
53	117	120	124	127	131	135	140	144	148	153	157	162	166	171	177	182	187
54	117	120	124	128	132	136	140	144	148	153	158	162	167	172	177	182	188
55	118	121	125	128	132	136	140	145	149	154	158	163	168	173	178	183	188

WEIGHT TABLE

(Showing average or normal height and weight according to age.)

MALES					FEMALES				
Age in years	Height in feet	Height in inches	Weight in kilos.	Weight in pounds	Age in years	Height in feet	Height in inches	Weight in kilos.	Weight in pounds
0	1	7½	3.20	7.0	0	1	7	2.91	6.4
1	2	3	9.45	20.7	1	2	2½	8.79	19.2
2	2	6	11.34	24.8	2	2	6½	10.67	22.3
3	2	10	12.47	27.2	3	2	9½	11.79	25.8
4	3	1	14.23	31.2	4	3	1	13.00	28.6
5	3	3	15.77	34.5	5	3	2½	14.36	31.5
6	3	5	17.24	37.8	6	3	7	16.01	35.2
7	3	7½	19.10	42.0	7	3	9	17.54	38.5
8	3	9½	20.76	48.5	8	3	10	19.08	41.8
9	4	0	22.65	49.7	9	3	10½	21.36	46.9
10	4	2	24.52	52.8	10	4	1	23.52	51.7
11	4	4½	27.10	59.6	11	4	3	25.70	56.5
12	4	6½	29.80	65.5	12	4	5	29.80	65.5
13	4	8½	34.40	75.6	13	4	7	32.90	72.3
14	4	10½	38.80	85.3	14	4	9	36.70	80.7
15	5	1	43.60	95.9	15	4	10½	40.40	88.9
16	5	2½	49.70	109.3	16	5	½	43.60	95.9
17	5	4	52.90	116.3	17	5	1½	47.30	104.0
18	5	5	57.90	127.3	18	5	1½	51.00	112.2
20	5	5½	60.10	132.3	20	5	2	52.30	115.0
25	5	6	62.90	138.3	25	5	2½	53.30	117.2
30	5	6	63.70	140.1	30	5	2½	54.30	119.4
40	5	6	63.70	140.1	40	5	2½	55.20	121.4
50	5	5½	63.50	139.7	50	5	½	56.20	123.6
60	5	4	62.90	138.3	60	5	0	54.30	119.4
70	5	3½	59.50	138.9	70	5	0	51.30	112.8

TABLE OF FOOD VALUES

A. Animal Foods

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories per 100 grams
(a) Meats and Meat Products				
Bacon, smoked	10.5	64.8	.....	645
Beef, canned:				
Boiled beef	25.5	22.5	.....	314
Chili-con-carne	13.3	4.6	4.0	114
Corned beef	15.6	26.2	.....	307
Dried beef	39.2	5.4	.....	211
Kidneys, stewed	18.4	5.1	.....	123
Luncheon beef	27.6	15.9	.....	261
Ox-tails	18.5	4.5	.....	118
Roast beef	25.9	14.8	.....	244
Rump steak	24.3	18.7	.....	273
Sweetbreads	20.2	9.5	.....	171
Tongue, ground	21.4	25.1	.....	321
Tongue, whole	19.5	23.2	.....	296
Tripe	16.8	8.5	.....	148
Beef, cooked:				
Roast beef	22.3	28.6	.....	356
Round steak (without fat)	27.6	7.7	.....	185
Sirloin steak, baked	23.9	10.2	.....	193
Tenderloin steak	23.5	20.4	.....	286
Beef juice	4.9	0.6	.....	26
Calf's foot jelly	4.3	....	17.4	89
Capon, cooked	27.0	11.5	.....	118
Chicken, broiler, fresh	21.5	2.5	.....	111
Chicken, fricasseed	17.6	11.5	2.4	189
Fowls, fresh	19.3	16.3	.....	230
Gelatin	91.4	0.1	.....	375
Goose, young, fresh	16.3	36.2	.....	403
Ham, deviled	19.0	34.1	.....	395
Ham, luncheon, cooked	22.5	21.0	.....	112
Ham, smoked, boiled	20.2	22.4	.....	291
Ham, smoked, fried	22.2	33.2	.....	400
Ham, smoked, lean	19.8	20.8	.....	274
Kidneys, stewed	18.4	5.1	.....	123
Lamb chops, broiled	21.7	29.9	.....	367
Lamb, leg, roast	19.7	12.7	.....	199
Liver, fresh or raw:				
Beef	21.0	4.5	1.7	133
Chicken	22.4	4.2	2.4	141
Goose	16.6	15.9	3.7	231
Mutton	23.1	9.0	5.0	199
Pork	21.3	4.5	1.4	135
Turkey	22.9	5.2	0.6	144
Veal	19.0	5.3	.....	127
Mutton, corned (canned)	28.8	22.8	.....	330
Mutton, leg roast	25.0	22.6	.....	312
Mutton tongue (canned)	24.4	24.0	.....	323
Pigs feet, pickled	16.3	14.8	.....	204
Pork ribs, cooked	24.8	37.6	.....	451
Pork steak, cooked	19.9	45.4	.....	504
Sausage, canned:				
Beef	17.9	20.6	.....	265
Bologna, Italian	24.9	27.8	.....	361
Frankfort	14.9	9.9	.....	153
Oxford	9.9	58.5	0.6	587
Pork	16.6	24.8	.....	299
Sausage, cooked (Deerfoot Farm)	19.93	54.21	0.34	587
Sausage, raw:				
Bologna	18.7	17.6	0.6 (0.2–3.1)	243
Frankfort	19.6	18.6	1.1 (0.0–6.6)	258
Pork	13.0	44.2	1.1 (0.0–8.6)	468
Summer	26.0	44.5	.....	520
Wienerwurst	28.0	22.1	1.6	327
Turkey, roast	27.8	18.4	.....	285

A. Animal Foods.—*Continued.*

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(b) Fish				
Fish, fresh or raw:				
Bass, black	20.6	1.7	.....	100
Bass, red	16.9	0.5	.....	74
Bass, sea	19.8	0.5	.....	86
Bass, striped	8.8	2.2	.....	56
Blue fish	19.4	1.2	.....	91
Blue fish (cooked)	25.9	4.5	.....	148
Butter fish	18.0	11.0	.....	176
Cat fish	14.4	20.6	.....	251
Cod	16.7	0.3	.....	72
Eels	18.6	9.1	.....	161
Flounder	14.2	0.6	.....	64
Haddock	17.2	0.3	.....	74
Halibut	18.6	5.2	.....	124
Herring	19.5	7.1	.....	146
Mackerel	18.7	7.1	.....	142
Mullet	19.5	4.6	.....	123
Perch, white	19.3	4.0	.....	116
Perch, yellow	18.7	0.8	.....	84
Pike, gray	17.9	0.8	.....	81
Salmon	22.0	12.8	.....	209
Shad	18.8	9.5	.....	165
Shad roe	20.9	3.8	2.6	132
Smelt	17.6	1.8	.....	89
Sturgeon	18.1	1.9	.....	92
Trout, brook	19.2	2.1	.....	98
Trout, salmon or lake	17.8	10.3	.....	169
Turbot	14.8	14.4	.....	195
Weakfish	17.8	2.4	.....	95
Whitefish	22.9	6.5	.....	154
Fish, preserved:				
Cod, salt, "boneless"	27.3	0.3	.....	108
Herring, smoked	36.9	15.8	.....	298
Mackerel, salt	21.1	22.6	.....	297
Mackerel, Spanish, broiled	23.7	6.5	.....	158
Salmon, canned	21.8	12.1	.....	202
Sardines, canned	23.0	19.7	.....	277
Shad roe	20.9	3.8	2.6	121
Sturgeon caviare	30.0	19.7	8.0	198
(c) Shell-Fish, Raw				
Clams, long	8.6	1.0	2.0	53
Clams, round	6.5	0.4	4.2	48
Crabs, hardshell	16.6	2.0	1.2	91
Crawfish	16.0	0.5	1.0	74
Lobster	16.4	1.8	0.4	86
Mussels	8.7	1.1	4.1	63
Oysters	6.2	1.2	3.7	52
Scallops	14.8	0.1	3.4	76
Terrapin	21.2	3.5	.....	120
Turtle, green	19.8	0.5	.....	86
(d) Eggs, Hens'				
Boiled eggs	14.0	12.0	.....	169
Raw eggs	14.8	10.5	.....	158
Whites, boiled	13.0	0.2	.....	55
Yolks, boiled	16.1	33.3	.....	376
(e) Dairy Products				
Butter	1.0	85.0	.....	793
Buttermilk	3.0	0.5	4.8	36
Cheese:				
American, pale	28.8	35.9	0.3	452
American, red	29.6	38.3	.....	476
Camembert	21.0	21.7	.....	290
Cottage	20.9	1.0	4.3	112
Cream, full	25.9	33.7	2.4	429
Dutch	37.1	17.7	.....	316
Limburger	23.0	29.4	0.4	369

A. Animal Foods.—*Continued.*

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(e) *Dairy Products (Cont'd.)*				
Cheese (cont'd.):				
Neufchatel	18.7	27.4	1.5	337
Pineapple	29.9	38.9	2.6	494
Roquefort	22.6	29.5	1.8	374
Skimmed milk	31.5	16.4	2.2	290
Swiss	27.6	34.9	1.3	442
Cream, approximately 20 per cent. fat	2.5	18.5	4.5	194
Cream, 40 per cent. fat	1.5	40.0	3.0	378
Kephir	3.1	2.0	1.6	38
Koumiss	2.8	2.1	5.4	53
Milk, condensed, sweetened	8.8	8.3	54.1	334
Milk, condensed, unsweetened (evaporated)	9.6	9.3	11.2	172
Milk, skimmed	3.4	0.3	5.1	37
Milk, whole	3.3	4.0	5.0	72
Whey	1.0	0.3	5.0	27
(f) *Fats*				
Beef fat, clear	4.1	82.1	.....	780
Cottolene	....	100.0	.....	930
Lard, refined	....	100.0	.....	930
Lard, unrefined	2.2	94.0	.....	883
Oleomargarine	1.2	83.0	.....	777
Pork fat, back	3.6	89.9	.....	851
Pork fat, belly	5.2	81.9	.....	783
Pork fat, ham	3.5	88.0	.....	833
Pork fat, jowl	5.9	78.8	.....	757
Pork, salt, clear fat	1.9	86.2	.....	809
Pork, salt, lean ends	8.4	67.1	.....	658

B. Vegetable Foods

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(a) *Vegetables, Raw*				
Artichokes	2.6	0.2	16.7	78
Asparagus	1.8	0.2	3.3	23
Beans, butter, green	9.4	0.6	29.1	163
Beans, dried	22.5	1.8	59.6	353
Beans, lima, dried	18.1	1.5	65.9	358
Beans, lima, fresh	7.1	0.7	22.0	126
Beans, string	2.3	0.3	7.4	43
Beets	1.6	0.1	9.7 (6–10)	44
Brussels sprouts	1.5	0.1	3.4	21
Cabbage	1.6	0.3	4.7 (3–6.5)	29
Cabbage, curly	4.1	0.6	6.2	48
Cabbage sprouts	4.7	1.1	4.3	47
Carrots	1.1	0.4	9.3 (5.9–11.5)	45
Cauliflower	1.8	0.5	4.7	30
Celery	1.1	0.1	3.3	18
Celery root	....	....	6.3	26
Chicory	....	....	15.0	62
Corn, green	3.1	1.1	19.7	101
Cucumbers	0.8	0.2	3.1	48
Dandelion greens	2.4	1.0	10.6	62
Eggplant	1.2	0.3	5.1	29
Endive	1.0	....	2.6	15
Kohl-rabi	2.0	0.1	7.0 (3.5–14)	38
Leeks	1.0	0.4	6.0	32
Lentils, dried	25.7	1.0	59.2	357
Lettuce	1.2	0.3	2.2	17
Lima beans, dried	18.1	1.5	65.9	358
Lima beans, fresh	7.1	0.7	22.0	126
Mushrooms	3.5	0.4	6.0 (2–18; largely unassimilable)	43
Okra	1.6	0.2	4.0	25
Onions	1.6	0.3	9.9 (4–14)	46

B. Vegetable Foods.—*Continued.*

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(a) Vegetables, Raw (Cont'd.)				
Onions, green	1.0	0.1	11.2	50
Oyster plant	1.2	0.1	7.0	35
Parsnips	1.6	0.5	11.0 (6–14)	56
Peas, dried	24.6	1.0	62.0	364
Peas, green	7.0	0.5	15.0	95
Peas, sugar, green	3.4	0.4	13.7	74
Potatoes, Irish	2.2	0.1	20.0 (13–27)	101
Potatoes, sweet	1.8	0.7	27.4	126
Pumpkins	1.0	0.1	6.0 (3–14)	30
Radishes	1.3	0.1	5.0 (2.7–7.5)	27
Rhubarb	0.6	0.7	2.5	19
Rutabagas	1.3	0.2	7.0 (3–12)	36
Sauerkraut	1.7	0.5	3.0	24
Sea-kale	1.4	....	3.8	21
Sorrel	....	....	3.0	12
Soy beans	20.0	43.0	28.0 (19.3–39; unassimilable)	467
Spinach	2.1	0.3	2.3	21
Squash	1.4	0.5	8.0 (3–15)	43
String beans	2.3	0.3	6.0 (3.9–10)	37
Sweet potatoes	1.8	0.7	26.0 (16.5–44.5)	120
Tomatoes	0.9	0.4	3.3	21
Truffles	9.1	0.5	7.0	71
Turnips	1.3	0.2	6.0	32
Vegetable marrow	0.1	0.2	2.6	13
Watercress	0.7	0.5	3.7	23
Yams	....	....	16.0	66
(b) Vegetables, Cooked				
Asparagus	2.1	3.3	2.2	48
Beans, string	0.8	1.1	1.9	21
Beet greens	2.2	3.4	3.2	54
Beets	2.3	0.1	7.4	41
Onions	1.2	1.8	4.9	42
Peas, green	6.7	3.4	14.6	119
Potatoes, Irish, boiled	2.5	0.1	20.9	97
Potatoes, sweet	3.0	2.1	42.1	204
(c) Vegetables, Canned				
Artichokes	0.8	...	4.4 (3.2–6.1)	21
Asparagus	1.5	1.1	2.3 (1.6–3.3)	26
Beans	22.5	1.8	55.0	334
Beans, baked	6.9	2.5	17.0	121
Beans, haricot-flageolets	4.6	0.1	11.0 (9.8–12.4)	65
Beans, haricot-verts	1.1	0.1	2.0	14
Beans, lima	4.0	0.3	13.0 (9.6–16.5)	72
Beans, red kidney	7.0	0.2	17.0	100
Beans, string	1.1	0.1	3.3 (1.5–4.5)	19
Beans, wax	1.0	0.1	3.1	18
Brussels sprouts	1.5	0.1	2.9	19
Corn, green	2.8	1.2	18.0 (11.7–25.1)	97
Cow peas	21.4	1.4	55.0	326
Lentils	25.7	1.0	59.0	357
Lima beans	4.0	0.3	13.0 (9.6–16.5)	72
Macedoine, mixed vegetables	1.4	...	3.9 (1.9–5)	22
Okra	0.7	0.1	2.9	16
Peas, green	3.6	0.2	10.0 (4.3–17.2)	58
Pumpkins	0.8	0.2	6.0 (3.6–7.3)	30
Squash	0.9	0.5	10.0 (3.6–12.8)	49
String beans	1.1	0.1	3.3 (1.5–4.5)	19
Succotash	3.6	1.0	18.0 (13.9–21.3)	98
Tomatoes	1.2	0.2	3.0 (1–4.5)	19
(d) Fruits and Berries, Raw				
Alligator pears	....	....	7.0	29
Apples	0.4	0.5	11.0	71

B. VEGETABLE FOODS.—*Continued.*

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(d) Fruits and Berries, Raw (Cont'd)				
Apricots	1.1	....	12.0	54
Bananas, yellow	1.3	0.6	22.0	101
Blackberries	0.9	2.1	8.0	56
Cherries	0.8	0.8	17.0	80
Cranberries	0.5	0.7	8.0	41
Currants	0.4	....	13.0	55
Dates	1.9	trace	54.0	229
Figs	1.5	....	17.0	76
Gooseberries	0.4	....	12.0	51
Grape fruit, California	....	....	6.9	28
Grape fruit, Florida	....	....	6.6	27
Grape fruit, Porto Rico	....	....	8.2	34
Grapes	1.3	1.6	19.2	99
Huckleberries	0.6	0.6	17.0	78
Lemons	1.0	0.9	7.0	31
Mangoes	....	....	13.0	53
Mulberries	0.3	....	12.0	48
Muskmelons	0.7	0.3	10.0	47
Nectarines	0.6	....	15.0	64
Oranges, California	....	....	8.3	34
Oranges, Florida	....	....	8.0	33
Peaches	0.5	0.2	9.0	41
Pears	0.4	0.6	11.0	72
Persimmons	0.8	0.7	32.0	141
Pineapples	0.4	0.3	12.0	54
Plums	1.0	....	17.0	74
Pomegranates	1.5	1.6	17.0	91
Prunes	0.8	....	19.0	81
Raisins	2.6	3.3	76.1	353
Raspberries, black	1.7	1.0	12.6	68
Raspberries, red	1.0	....	12.6	56
Strawberries	1.0	0.6	7.4	40
Watermelons	0.4	0.2	6.7	31
Whortleberries	0.7	3.0	10.0	72
(e) Fruits and Berries, Canned				
Apricots	0.9	....	17.0	73
Blackberries	0.8	2.1	56.0	252
Blueberries	0.6	0.6	13.0	61
Cherries	1.1	0.1	21.0	92
Crab-apples	0.3	2.4	54.0	245
Peaches	0.7	0.1	11.0	49
Pears	0.3	0.3	18.0	78
Pineapples	0.4	0.7	15.0 (6–25)	70
Strawberries	0.7	....	24.0	101
Dried fruits	....	....	63.0+	
Jams, jellies, preserves, and marmalades	....	....	47.0+	
(f) Nuts				
Almonds	21.0	54.9	17.3	667
Brazil nuts	17.0	66.8	7.0	364
Butternuts	27.9	61.2	3.5	95
Chestnuts, dried	10.7	7.0	74.2	413
Chestnuts, fresh	6.2	5.4	42.1	248
Cocoanuts	5.7	50.6	27.9	607
Filberts	15.6	65.3	13.0	724
Hickory nuts	15.4	67.4	11.4	736
Peanut butter	29.3	46.5	17.1	623
Peanuts	25.8	38.6	24.4	563
Pecans	11.0	71.2	13.3	760
Pine nuts; pignolias	33.9	49.4	6.9	626
Pistachios	22.3	54.0	16.3	659
Walnuts, California	18.4	64.4	13.0	726
Walnuts, California, black	27.6	56.3	11.7	683
Walnuts, California, soft shell	16.6	63.4	16.1	723
"Malted nuts"	23.7	27.6	43.9	534

B. Vegetables Foods.—*Continued.*

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(g) Flours, Meals, Etc.				
Acorn meal	7.3	4.9	64.0	338
Arrowroot (tapioca)	0.1	0.1	84.0	346
Banana flour	3.9	1.0	85.0	375
Barley flour and meal	10.5	2.2	72.8	361
Buckwheat	10.1	2.5	61.0	315
Buckwheat flour	6.4	1.2	77.9	356
Cassava meal	1.3	1.2	81.0	348
Cornmeal, unbolted	8.4	4.7	74.0	381
Corn flakes, toasted	....	....	81.0	332
Corn starch	1.2	....	85.0	353
Cotton-seed flour: Schulenburg Oil Mill, Schulenburg, Texas	50.4	11.2	1.1	348
Cracked wheat	11.1	1.7	74.0	365
Cream of Wheat	11.5	0.9	75.0	353
Farina	11.0	1.4	75.0	367
Force	10.6	1.1	74.0	358
Glidine: Menley James, N. Y.	91.4	0.8	1.0	377
Graham flour	13.3	2.2	70.0	362
Grape nuts	11.5	0.6	75.0	360
Hominy	7.6	0.2	78.0	353
Hominy, cooked	2.2	0.2	17.8	84
Hominy flour	8.3	0.6	79.0	363
Macaroni	13.4	0.9	74.1	366
Macaroni, cooked	3.0	1.5	15.8	91
Malt Breakfast Food	13.8	1.5	75.0	378
Mapl-Flake	11.0	1.4	76.0	369
Oatmeal	16.1	7.2	67.5	409
Oatmeal, boiled	2.8	0.5	11.5	63
Oatmeal water	0.7	0.1	2.9	16
Oats, rolled	16.7	7.3	66.2	407
Pea flour	25.7	1.8	57.0	354
Pettijohn's Breakfast Food	9.1	2.0	74.0	359
Plasmon: Plasmon Co., London	78.7	2.7	.....	339
Pop corn, popped	10.7	5.0	77.0	586
Potato starch	0.9	0.1	81.0	337
Puffed rice	6.7	0.4	80.0	359
Quaker Wheat Berries	13.8	1.9	72.0	370
Ralston Health Food	11.9	1.7	72.0	360
Rice	8.0	0.3	79.0	359
Rice, boiled	2.8	0.1	24.4	112
Rye	10.2	1.7	72.0	353
Rye flour	6.8	0.9	78.7	359
Sago starch	2.2	....	81.0	341
Shredded Wheat Biscuit	8.3	0.6	76.0	351
Soy bean meal	42.5	19.9	34.0 (assimilable carb. is 3% or less)	499
Tapioca (arrowroot)	0.1	0.1	84.0	346
Triscuit	11.0	1.4	75.0	365
Wheatena	11.3	2.8	76.0	384
Wheat flour, California fine	7.9	1.4	76.4	358
Wheat flour, entire wheat	13.8	1.9	71.9	369
Wheat flour, patent roller process	11.4	1.0	75.1	363
Wheatlet, patent roller process	12.8	1.6	74.0	371
(h) Breads, Cakes, Pastry, Etc.				
Bread:				
Acorn bread	....	....	27.0	111
Alfalfa bread	10.6	1.3	64.0	318
Biscuit, homemade	8.7	2.6	55.3	277
Brown bread	5.4	1.8	47.1	231
Buns, hot cross	7.9	4.8	49.7	281
Cassava bread	....	....	27.0	111
Corn bread (Johnny cake)	7.9	4.7	46.3	265
Gluten bread	9.3	1.4	49.8	255
Graham bread	8.9	1.8	52.1	266
Peanut bread	33.6	12.8	20.0	339
Rolls, all analyses	8.9	4.1	56.7	307

B. Vegetables Foods—*Continued.*

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(h) Breads, Cakes, Pastry, Etc. (Cont'd.)				
Bread:—*Continued.*				
Rolls, French	8.5	2.5	55.7	286
Rolls, Vienna	8.5	2.2	56.5	287
Rye bread	9.0	0.6	53.2	260
Rye bread, whole	11.9	0.6	35.0	198
Toasted bread	11.5	1.6	61.2	312
Wheat bread, home made	9.1	1.6	53.3	270
Wheat bread, miscellaneous	9.3	1.2	52.7	266
Wheat bread, whole	9.7	0.9	49.0	249
Cake (all analyses, except fruit cake)	6.3	9.0	63.0 (53–78)	368
Cake, fruit	5.0	10.9	64.0	384
Cookies (all analyses)	7.0	9.7	73.7	420
Cracker meal	10.9	6.0	72.9	399
Crackers:				
Boston (split)	11.0	8.5	71.1	415
Graham	10.0	9.4	73.8	430
Oatmeal	11.8	11.1	69.0	434
Oyster	11.3	10.5	70.5	433
Pilot bread	11.1	5.0	74.2	396
Saltines	10.6	12.7	68.5	441
Soda	9.8	9.1	73.1	424
Uneeda biscuit	10.1	8.8	70.0	399
Water	11.7	5.0	75.7	405
Doughnuts	6.7	21.0	52.0 (45–63)	436
Ginger snaps	6.5	8.6	76.0	418
Jumbles	7.4	13.5	63.0 (52–71)	418
Macaroons	6.5	15.2	64.0 (57–70)	430
Noodles	13.3	0.8	72.0	357
Pie:				
Apple	3.1	9.8	42.8	279
Custard	4.2	6.3	26.1	183
Lemon	3.6	10.1	37.4	262
Mince	5.8	12.3	38.0 (30–44)	194
Raisin	3.0	11.3	47.2	311
Squash	4.4	8.4	21.7	185
Pretzels	9.7	3.9	72.8	374
Pudding, rice custard	4.0	4.6	31.4	188
Pudding, tapioca	3.3	3.2	28.2	159
Spaghetti	12.1	0.4	74.0	353
Vermicelli	10.9	2.0	72.0	358
Zwieback	9.8	9.9	73.5	433
Zwieback, peanut	23.2	8.0	28.0	284
(i) Pickles and Condiments				
Capers	3.2	0.5	5.0	41
Chili sauce	....	....	20.0 (14–28)	82
Horseradish	1.4	0.2	11.0	53
Ketchup	1.8	0.2	10.0 (3–26)	50
Mustard, prepared	4.7	4.1	5.0	78
Mustard, prepared, plus cereal	3.5	1.9	7.0 (4–15)	61
Olives, green	2.1	12.9	1.8	137
Olives, ripe	2.0	21.0	4.0	220
Peppers (paprika), green, dried	15.5	8.5	63.0	400
Peppers, red chili	9.4	7.7	70.0	397
Pickles, cucumber	0.5	0.3	2.7	16
Pickles, mixed	1.1	0.4	4.0	25
Pickles, spiced	0.4	0.1	21.0	89
Vinegar, cider	....	....	0.25 (–1.52)	1
Vinegar, distilled	....	....	.....	0
Vinegar, spiced salad	....	....	10.0	41
(j) Beverages, Non-Alcoholic				
Birch beer	....	....	8.0	33
Cereal coffee infusion (1 part boiled in 20 parts water)	0.2	....	1.4	7
Cider	....	....	4.5 (0–13.5)	18

B. Vegetable Foods.—*Continued.*

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(j) Beverages, Non-Alcoholic. (Cont'd.)				
Cocoa (0.5 oz. to 1 pt. milk)	....	....	6.0	25
Cocoa (0.5 oz. to 1 pt. water)	....	....	1.1	5
Coffee (1 oz. to 1 pt. water)	....	....	0.7	3
Cream or lemon soda	....	....	7.0	29
Ginger ale	....	....	8.0	33
Root beer	....	....	9.0	37
Sarsaparilla	....	....	7.0	29
Tea (0.5 oz. to 1 pt. water)	....	....	0.6	2
(k) Miscellaneous Vegetable Foods				
Baking powder	....	....	32.0 (0–51.5)	131
Chocolate	12.9	48.7	30.3	629
Cocoa	21.6	28.9	37.7	510
Yeast, compressed	11.7	0.4	21.0	138

C. Miscellaneous Foods

	Protein, per cent.	Fat, per cent.	Carbohydrates, per cent.	Calories, per 100 grams
(a) Soups, Canned				
Bouillon	2.2	0.1	0.2	11
Chicken gumbo	3.8	0.9	4.7	43
Chicken soup	3.6	0.1	1.5	22
Consommé	2.5	....	0.4	12
Julienne	2.7	....	0.5	13
Mock turtle	5.2	0.9	2.8	41
Mulligatawny	3.7	0.1	5.7	40
Oxtail	4.0	1.3	4.3	46
Pea soup	3.6	0.7	7.6	52
Tomato soup	1.8	1.1	5.6	41
Vegetable soup	2.9	....	0.5	14
(b) Soups, Home-Made				
Bean	3.2	1.4	9.4	65
Beef	4.4	0.4	1.1	26
Chicken	10.5	0.8	2.4	61
Clam chowder	1.8	0.8	6.7	43
Meat stew	4.6	4.3	5.5	81
Soup stock	5.8	1.5	.....	38

Foot-and-Mouth Disease.—A usually mild acute infectious disease, contracted from infected cattle and other domestic animals, through milk, butter, or cheese, or by cutaneous inoculation, and characterized by fever and stomatitis, followed in about two or three days by subsidence of the fever and the appearance of vesicles in and about the mouth and fingers, sometimes over the whole body, with swelling of the buccal mucous membrane and marked salivation. The disease lasts about two weeks, more or less.

Treatment.—Isolate the patient (see Disinfection), and treat the lesions antiseptically (see Stomatitis).

Infected animals should be isolated and all milk boiled.

Foot Pain.—See Pain.

Foreign Bodies in the Air Passages.—See Throat Diseases, Part 9.

Foreign Bodies in the Œsophagus.—See Throat Diseases, Part 9.

Foul Breath.—See Breath, Bad or Offensive.

Fourth Nerve.—See Motor Nerves of the Eyeball.

Fractures.—See Orthopædics, Part 10.

Idiopathic.—L. *fractur'a*, from *fran'gere*, to break; Gr. ἴδιος own + πάθος disease. (See Fragilitas Ossium.)

Pathological.—See Fragilitas Ossium.

Skull.—See Concussion, Contusion, and Compression of the Brain.

Spontaneous.—See Fragilitas Ossium.

Fragilitas Ossium; Osteopsathyrosis.—L. *fragil'itas*, brittleness; *os'*, pl. *os'sa*, bone; Gr. ὀστέον bone + ψαθυρός friable. The various causes of abnormal brittleness of the bones, whereby they tend to fracture from slight cause, are as follows: Congenital fragility of

all the bones in the new-born (fœtal osteogenesis imperfecta); hereditary fragility occurring in families, associated with blue sclerotics and small stature, and due to a deficiency in fibrous tissue; senile osteoporosis (Gr. πόρος passage); atrophy due to disuse; chronic wasting diseases and cachexia; rickets, scurvy; phosphorus poisoning; insanity; general paresis; locomotor ataxia; syringo-myelia; paralysis; anterior poliomyelitis; aneurysm causing erosion; osteomalacia; osteomyelitis, pyogenic or tuberculous; tumors, *e.g.*, osteosarcoma, metastatic sarcoma, metastatic carcinoma, multiple myeloma, hypernephroma, benign osseous cysts, echinococcus cyst, enchondroma, gumma.

Treatment.—This depends upon the cause. In appropriate cases one may try experimentally phosphorus, or pituitary extract (see Part 11): the anterior lobe, which is related to the general growth of the body, especially the skeleton; obtainable from Parke Davis Co., and from Burroughs and Welcome.

Frambesia.—L. *frambœ'sia*, raspberry. See Skin Diseases, Part 5.

Frequent Micturition.—See Polyuria.

Friedreich's Ataxia.—See Ataxia, Friedreich's Hereditary.

Frost-Bite.—See Skin Diseases, Part 5.

Fumigation.—L. *fumiga'tio*. See Disinfection.

Functional Albuminuria.—See Albuminuria.

Furrowed Tongue.—See Skin Diseases, Part 5.

Gait.—**1. Ataxic-cerebellar.**—In one form of cerebellar ataxia, in which there is disturbance of equilibrium and often vertigo, the gait is irregular and swaying or staggering, like that of a drunken man. In another form, the gait resembles that of spinal ataxia, a stamping gait with the feet far apart (see Ataxia, and Cerebellar Lesions, under Brain Localization.)

Acoustic nerve and labyrinthine irritation are accompanied by a staggering gait; indeed, vertigo from any cause is apt to be associated with a staggering gait.

2. Ataxic-spinal.—This is the tabetic gait, an irregular stamping gait with the feet far apart, the hip overflexed, the excursions of the movements exaggerated, and the patient closely watching his movements to make sure of the position of his limbs (see Ataxia).

3. Paralytic-flaccid.—Steppage gait due to toe-drop, the foot being raised high and slapped down with a flail-like motion; joints flaccid.

4. Paralytic-spastic.—Muscles stiff, joints more or less rigid, tendency of the legs to cross on walking, tendency to ankle clonus, steps short, and difficulty in lifting the feet, "the patient scuffs along, usually with bent knees, and as if his feet were fastened to the ground." (R. C. Cabot.)

5. Tremor.—Occurring in multiple sclerosis, hysteria, and paralysis agitans. The gait of the latter is characterized by a stooped rigid attitude, and propulsion or festination and retropulsion (sometimes lateropulsion), producing the appearance of the patient running after his centre of gravity.

6. Wobbly Gait.—Occurring in paralysis of the gluteus medius et minimus muscle (see Dystrophy, Progressive Muscular), and in dislocation of the hip.

7. Intermittent Claudication.—Inability to walk, except for a short distance, because of the occurrence of pain, fatigue and numbness in the legs, these symptoms disappearing with rest (see Claudication, Intermittent).

8. Gait of Simple Weakness.

Gall-Bladder Cancer.—(See Cancer of the Gall-Bladder and Biliary Ducts.

Gall-Bladder Enlargement.—**Causes.**—Cholecystitis; stone at the neck of the gall-bladder; compression of the common duct by a tumor growth, as cancer of the pancreas.

Gall-Bladder Inflammation.—See Cholecystitis.

Gall-Ducts, Cancer of the.—See Cancer of the Gall-Bladder and Biliary Ducts.

Inflammation, Catarrhal, of the.—See Jaundice, Catarrhal.

Inflammation, Suppurative, of the.—See Cholangitis, Suppurative.

Gall-Stones.—See Cholelithiasis.

Gangrene, Cutaneous.—Gr. γα'γγραινα; L. *cu'tis*, skin. See Skin Diseases, Part 5.

Gangrene, Hospital.—See Inflammation.

Gangrene, Pulmonary.—See Pulmonary Gangrene.

Gangrenous Stomatitis.—See Stomatitis.

Gas Bacillus Infection.—See Inflammation.

Gas-Poisoning.—See Asphyxia, and Poisoning.

Gastralgia.—Gr. γαστήρ stomach + ἀ'λγος pain. Gastralgia signifies a sudden attack of severe epigastric pain, radiating toward the back, and usually independent of the taking of food. It is merely a symptom, induced by many different causes, *e.g.*, gastric ulcer; gastric cancer; hyperchlorhydria; gastritis; empty stomach; poisoning; perigastric adhesions; exposure to cold; wetting of the feet; drinking of ice-water; tobacco; genito-urinary disease; uterine displacement; enteroptosis; appendicitis; her-

niæ (inguinal, femoral, abdominal, occult); aortic insufficiency; aneurism of the abdominal aorta; central nervous disease: tabes (gastric crises), myelitis, multiple sclerosis, brain tumor, neurasthenia, hysteria; mucous colitis; constitutional disease: plumbism, gout, anæmia, malaria, tuberculosis, Addison's disease, etc.; dorsal Pott's disease.

Exclude renal and gall-stone colic, angina pectoris, diaphragmatic pleurisy, etc. (See also Hyperæsthesia Gastrica.)

Treatment.—Consider the cause. For the relief of pain, apply a hot water bag, a hot turpentine stupe, or a mustard poultice (see Part 11), or galvanization, with the anode to the epigastrium and the cathode to the spinal column. Some recommend a weak current, of no more than ten minutes' duration, others a strong current. Ortner says the current should be strong enough to produce visible abdominal contractions without substantial pain. The taking of food sometimes gives relief. The writer was once instantly relieved by a large draught of blackberry wine, taken in desperation for lack of anything else at hand.

Useful analgesic drugs are: Hoffman's anodyne, validol, chloroform water, tincture of valerian, bromoform, phenacetin, antipyrin, lactophenin, pyramidon, cocaine, codeine, and morphine (see Part 11).

The coal-tar analgesics are of especial value in nervous cases.

Arsenic in small doses over a prolonged period is recommended (Fowler's solution).

Gastrectasis.—See Dilatation of the Stomach, Acute, and Chronic.

Gastric Acidity.—See Hyperchlorhydria.

Anacidity.—See Anacidity.

Analysis and Technique.—See under Dyspepsia.

Atony.—See Dyspepsia, Nervous, and Enteroptosis.

Atrophy.—See Gastritis, Chronic.

Cancer.—See Cancer of the Stomach.

Catarrh.—See Gastritis Acuta, and Gastritis Chronica.

Cirrhosis.—See Cirrhosis of the Stomach.

Dilatation.—See Dilatation of the Stomach, Acute, and Chronic.

Gastric and Duodenal Ulcer.—Gr. γαστήρ stomach; L. *duode'ni*, twelve (twelve finger-breadths in length); L. *ul'cus*, ulcer. Ulcer may exist without symptoms; or backache may be the only symptom; or chronic dyspepsia may be present for months, and a profuse hemorrhage or an acute perforative peritonitis suddenly appear.

The characteristic symptoms are as follows: pain, occurring sooner or later after eating, at a definite time in each case, commonly localized, and often radiating to the back, and relieved by food or alkalies; epigastric tenderness, commonly localized; sometimes tenderness to the left of the spine, opposite the ninth and tenth dorsal vertebræ, or elsewhere along the spine; vomiting, usually following pain; hæmatemesis (*q.v.* for other causes); occult bleeding, detected by examination of the fæces by means of the benzidin test, described below; dyspepsia; commonly hyperchlorhydria (*q.v.*)

According to Mayo's statistics, considerably over half the ulcers are duodenal.

Benzidin Test for Occult Blood.—For three days before making the test, exclude from the diet blood, blood sausage, raw or rare beef, or meat of any kind, iron, and chlorophyl containing foods. Extract the fat from a portion of the fæces by shaking it with an equal amount of a mixture of ether and alcohol; then add to the fat-free stool one-third its volume of glacial acetic acid and 10 c.c. of ether, and shake thoroughly. To the resulting acid ethereal extract, which contains the hæmatin, add 2 c.c. of a saturated alcoholic solution of benzidin and 2 c.c. of 3 per cent. hydrogen peroxide. The appearance of a greenish-blue color indicates the presence of blood.

Wagner's simple and reliable modification of the benzidin test is as follows: mix a knife-point of benzidin with 2 c.c. of glacial acetic acid and 20 drops of a 3 per cent. solution of hydrogen peroxide. Pour a few drops of this mixture over a little of the solid fæces spread on a clean glass slide; when, in the presence of blood, a greenish-blue color will appear almost immediately.—Webster. If the color appears later than two minutes, the test is negative.

Occult bleeding may occur in the following conditions besides gastric and duodenal ulcer, viz., those conditions producing hæmatemesis (*q.v.*); typhoid fever; intestinal ulceration (see under Enteritis Chronica, for all causes); malignant tumors of the pancreas or liver with ulceration; hemorrhagic pancreatitis; intestinal parasites; hemorrhoids; fissure in ano; fistula in ano.

For gastric analysis and technique, see under Dyspepsia.

Etiology.—External trauma; epigastric compression, occurring in tight lacing, tailors, cobblers, locksmiths, bookkeepers, basket-makers, masons, street-cleaners; irritating ingesta, *e.g.*, cold or hot foods, chemical

irritants, excesses in eating, drinking, and smoking, foreign bodies; hyperacidity; anæmia; arteriosclerosis; chronic endocarditis; gastric cancer; tuberculosis; syphilis; typhoid fever; diphtheria; sepsis; focal infection; skin burns. The presence of hydrochloric acid tends to prevent healing. Ulcers exist only where the acid gastric juice is present.

Prognosis.—The great majority, perhaps 97 per cent. of acute cases, those cases of acute onset with copious hemorrhage, get well in a few months with rest and a restricted diet, or even without treatment. W. J. Mayo says in this connection, however, "It should be borne in mind that a single hemorrhage which is not preceded and followed by the usual signs and symptoms of ulcer is seldom due to ulcer, but usually to some toxic cause" (see Hæmatemesis).

Chronic recurrent cases are perhaps not completely curable except by surgery.

The prognosis in all cases of ulcer is good, about 90 to 95 to 98 per cent. (Mayo) recovering under medical or surgical treatment, as required. The tendency to cancer should be borne in mind.

Treatment.—The following regime is for severe cases. It may be modified for mild cases.

Enjoin rest in bed for a period of from three to six weeks (eight to ten weeks in ulcers of long standing). Thereafter allow the patient up gradually for one additional hour or half-hour each day, until he is up all day; but do not allow him to go to work for some weeks after leaving his bed. He should rest for at least an hour after each meal. Have him understand that it requires from three to six months to a year or longer of careful dieting to effect a cure.

For the first three to six days, if there is hemorrhage or severe pain or vomiting after eating, one may, if deemed advisable, allow nothing at all by mouth, not even water, but feed the patient per colon twice daily with warm milk, 3 to 4 ounces, two well-beaten raw eggs, or only the yolks, one tablespoonful of white flour, 30 grains of salt (15 grs. to each egg), 20 grains of sodium bicarbonate, a dessertspoonful of liquor pancreaticus, and a tablespoonful of grape sugar (to obviate acidosis), to which may be added, if desired, one-half to one ounce of claret or brandy. Laudanum, 5 to 15 drops, may be added if the enema is not well retained. One hour before each feeding the bowel should be cleansed with normal saline solution, one pint of which should be allowed to remain, in order to prevent or relieve thirst. The mouth, gums, and teeth should be cleansed frequently. Hot or cold applications to the epigastrium are well recommended. Instead of nutrient enemata, Fulton gives normal saline solution by the Murphy drop method.

The following is Sippy's method of treatment (evidently the best):

First day.—Milk and cream, aa℥ss, or one tablespoonful, every hour from 7 A. M. to 7 P. M. Midway between feedings administer heavy calcined magnesia and sodium bicarbonate, aa gr. x, in one to three ounces of water, alternately with bismuth subcarbonate, gr. x. and sodium bicarbonate, gr. xxx. After the last feeding give the powders every half hour for 3 or 4 doses, or until the stomach is empty. This medication is to be continued throughout the treatment, the bismuth and the magnesia being substituted, the one for the other, according to the presence of diarrhœa or constipation. Some give, instead of the bismuth, silver nitrate, 0.1 per cent. solution, one tablespoonful (about gr. ¼) in a wineglass of water, before meals.

To see that sufficient alkali is being given to remove gastric acidity, aspirate (see under Dyspepsia) and test the stomach contents late in the afternoon, just before a feeding or powder, and, if acidity is still present, add soda, 10 grs. at a time, to each powder, until the acidity is controlled.

Second day.—The same as the first day, if the diet has caused no discomfort.

Third, fourth, and fifth days.—Milk and cream, aa℥iss, every hour.

Sixth and seventh days.—One soft egg added to the milk and cream mixture in the forenoon, and another in the afternoon, if desired.

Eighth, ninth, and tenth days.—If no discomfort has been experienced from the preceding diet, add at noon, if desired, 3 ounces of a well-cooked cereal—rice, oatmeal, farina, or cream of wheat, measured after it is prepared.

Eleventh and twelfth days.—Add another 3 ounces of cereal or a soft egg; but not to the noon meal.

Thirteenth day.—The same as before; or add another soft egg or 3 ounces of cereal. The patient, at about this time, is receiving between 7 A. M. and 7 P. M., 1½ ounces each of milk and cream every hour, 2 to 4 eggs, and 2 to 4 feedings of 3 ounces of cereal. "The total bulk at any one feeding should not exceed six ounces when feeding every hour"; and no more than four eggs and four feedings of 3 ounces of cereal

should be given in addition to the milk and cream in one day.

At about the end of the third week.—Add if desired, stewed fruits, jellies, and gelatin preparations, and seedless marmalade in small quantity. Substitute for any one or two feedings, if desired, cream soups of all kinds. Allow toasted cracker, milk toast, and purée of potato.

Increase the interval between feedings at about the end of the tenth week to two hours. No more than eight ounces at a feeding should then be given. Milk and cream may now be increased to 2½ ounces each, and various vegetable purées and stale bread with butter may be allowed. Two powders are now taken midway between feeding.

At the end of twenty weeks, increase the interval between feedings to three hours, five meals daily, three small meals at the regular hours, and a glass of equal parts milk and cream midway between meals. Two powders are now taken midway between feedings and one, two, and three hours after the evening meal, with a week's interruption every five to six weeks. Continue this regimen for a period of four or five months or longer, depending on the age of the ulcer (*i.e.*, the duration of the symptoms) previous to treatment. The meals are given frequently in small amounts, together with alkalies, in order to keep the free, corrosive HCl down to a minimum, and to reduce mechanical irritation and peristalsis.

In cases of pyloric obstruction, which constitute, according to Sippy, about 70 per cent. of the cases definitely diagnosed as ulcer, Sippy advises the use of more alkali than in non-obstructive cases (usually 10 to 30 grs. more of soda), and also aspiration of the stomach contents every night, one-half hour after the last powder is taken. The alkali should be increased gradually until aspiration late in the afternoon just prior to a feeding or a powder, and at night one-half hour after the last powder, shows no free acidity (see tests under Dyspepsia).

In cases of excessive continued secretion aspiration should be repeated at twelve or one o'clock at night, and if 300 to 400 c.c. of gastric juice is found, another aspiration should be performed at 4 or 5 A. M., and if at this time 100 to 200 c.c. of fluid is present, aspiration should be repeated before the first meal. This is continued until no more than the normal 10 or 15 c.c. of secretion is found at midnight or thereafter, which is usually for three or four nights.

When the evening aspiration shows very little or no food, it may be discontinued (usually at the end of one or two weeks).

About 90 per cent. of obstructive cases (due to pylorospasm or acute inflammatory swelling), says Sippy, yield to the above treatment in two to three weeks; the remaining 10 per cent. (due to indurated tissue narrowing) yield after three or more weeks.

The presence of pyloric obstruction means that the ulcer is almost always duodenal and therefore not prone to cancerous degeneration.

The occurrence of pain not relieved by food or alkali is due to local peritonitis, perforation, perigastric abscess, carcinoma, gallbladder disease, or a colon irritated by too much magnesia. (Sippy.) "During a period of a year or more, milk, cream, cereals, soft eggs, vegetable purées, cream soups, bread and butter, and lean meats, finely divided, when desired, should form the basis of the diet." If plain milk is distasteful, it may be flavored with grape juice, coffee, tea, or cocoa, or a small quantity of cereal added; or buttermilk, egg albumen, or cream soups may be substituted. Frozen balls of butter may be substituted for the cream. Boil or peptonize the milk (see Part 11), should curds appear in the stools. Sometimes olive oil, 1½ ounces t.i.d., one hour before meals, or 5 ounces in the morning on an empty stomach, is of benefit, especially in old cases with pylorospasm due to hyperacidity. For hyperchlorhydria and hypersecretion, tincture of belladonna in 5♏ doses, one-half hour before meals, t.i.d., is of value.

℞ Extracti belladonnæ.. gr. iiss–iv–viiss
(gr. ⅛–¼–½ per dose)
Bismuthi subnitratis,
Magnesii oxidi,
Sodii bicarbonatis, aa ℥iiss (gr. xaa per dose)
M. et div. in pulveres 15.
Sig.—One powder t.i.d.p.c. (Ortner). (Watch for toxic symptoms, q. v. in Part 11).

Regime used in the Massachusetts General Hospital (R. C. Cabot):

"A. Rest in bed."

"B. Diet as follows:

1. "For first three days give every two hours (when awake)—milk, 2 ounces, with two powdered soda crackers (2½ inches square) and cane sugar, 1 teaspoonful (if relished)."

2. "For next two or three weeks every two hours—milk, 6 to 8 ounces, with four powdered soda crackers, and cane sugar, 1 to 2 teaspoonfuls (if desired)."

3. "For next two months (more or less) a diet consisting of average portions of the following articles—milk and crackers, as

above; cornmeal mush with cream and sugar or salt; potato purée; milk with whites of two eggs; soft custard; chocolate; pea purée. Water is given according to the patient's desire."

C. "For pain or sour burning eructation a saucer of sodium bicarbonate and a spoon are put at the bedside and the patient is told to take the soda in amounts sufficient to relieve him."

For hemorrhage, enjoin absolute rest, including the use of the bedpan and urinal; lower the head and elevate the foot of the bed, to prevent fainting; morphine hypodermically is generally advised, but Lindberg believes that it promotes bleeding by relaxing the gastric muscles; apply an ice-bag to the epigastrium, suspended from a bed cradle; give ice to suck but not to swallow; administer one of the following hæmostatics: (1) adrenalin chloride, 1 : 1000, 30 drops in a tablespoonful of water every hour for two or three doses, or 10 to 20 to 30 drops every three or four hours; (2) ol. terebinthinæ rectificati, 1 tablespoonful beaten into a fine emulsion with the white of an egg—1 teaspoonful every hour (F. C. Moore, highly praised); (3) bismuth subnitrate; (4) sterile 10 per cent. gelatine—40 c.c., at 104° F., subcutaneously, repeated at least once a day; (5) antidiphtheritic serum, 2000 units, or normal horse serum, 15 c.c., repeated in 3 to 12 hours (Fulton). Allow no food by mouth or rectum for four or five days; but administer normal saline solution (℥i ad Oi) per rectum, by the Murphy drop method (about 2 quarts in 24 hours; dextrose, 2 to 5 per cent., may be added, to prevent acidosis), in order to relieve thirst and avoid gastric peristalsis. If the hemorrhage is continuous and dangerous, or persistently recurs, it is generally advised that the stomach be opened and the bleeding point ligated from the mucous side, or excised, and the peritoneum sutured over its base, to prevent perforation. Lindberg and Eiselsberg, however, declare that statistics show expectant treatment to be safer than operation (see also Hemorrhage).

For perigastritis and threatened perforation, suggested by continuous discomfort, aggravated by breathing, local tenderness, elevation of temperature and leucocytosis: absolute rest; no food or drink; after 24 hours, rectal saline enemata, continued until the acute symptoms have subsided. It is perhaps best, however, to operate at once.

The sudden occurrence of violent pain with abdominal rigidity means perforation, which calls for immediate operation. After closing the perforation, flushing out the abdomen with hot normal saline solution (0.9 per cent.), and closing the abdominal wound, introduce a glass tube just above the symphysis into the pelvis, for drainage, and place the patient in the semi-sitting posture. Subdiaphragmatic abscess calls for subdiaphragmatic or transpleural evacuation.

For severe pain, apply hot poultices to the epigastrium, and administer orthoform, or anæsthesin, or codeine, or morphine. For burning pain, due to hyperacidity, prescribe calcined magnesia, or sodium bicarbonate, with bismuth; or belladonna (see Part 11 for formulæ, etc.).

For vomiting, see Vomiting.

For constipation, calcined magnesia, or Carlsbad salts, or enemata.

LENHARTZ SCHEDULE

Days after last hemorrhage	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Eggs, beaten up and served cold	2	3	4	5	6	7	8	8	8	8	8	8	8	8
Sugar, grams...	...	...	20	20	30	30	40	40	50	50	50	50	50	50
Cold milk, c.c...	200	300	400	500	600	700	800	900	1000	1000	1000	1000	1000	1000
Raw chopped meat, grams...	...	...	...	...	...	35	70	70	70	70	70	70	70	70
Boiled rice, gms.	...	...	...	...	...	....	100	100	200	200	300	300	300	300
Zwieback, grams	...	...	...	...	...	....	....	20	40	40	60	60	80	100
Raw shaved ham, grams....	...	...	...	...	...	....	....	....	....	....	50	50	50	50
Butter, in frozen pills, grams....	...	...	...	...	...	....	....	....	....	....	20	40	40	40
Calories.....	280	420	637	777	955	1135	1588	1721	2138	2478	2941	2941	3007	3073

1 gm. = 15 grs.; 100 c.c. = 3⅓ oz.; 4 c.c. = 1 dr.
Salt should be avoided.
Feed every 2 hours; eggs and milk alternately.
Absolute rest in bed for at least four weeks; an ice-bag to the stomach for two weeks, almost continuously; bismuth, gr. xxx, twice or thrice a day; no attention to the bowels for one or two weeks, then a daily enema, if necessary of warm water and glycerine.

For anæmia, Blaud's pills with a laxative; or preferably, says Forchheimer, the organic preparations-bovinine, hæmogallol, hæmol, iron peptonate, or ferratin (see Anæmia).

Indications for Operation: (1) Failure of medical treatment to bring about material improvement after a trial of about four to eight weeks. (2) Hemorrhage following upon a prolonged dyspepsia. (3) Chronic recurrent symptoms. (4) Perigastritis with adhesions or abscess (suggestive symptoms: continuous discomfort, aggravated by breathing, local tenderness, elevation of temperature, and leucocytosis). (5) Pyloric stenosis and gastric dilatation (?). (6) Hourglass stomach. (7) Perforation. (8) Uncontrollable hemorrhage (?). (9) Suspected carcinoma.

The operation of choice is posterior gastro-jejunostomy, combined with excision of the ulcer, if possible, because of the danger of malignancy. Small gastric ulcers may be destroyed with the cautery. Transgastric excision is of service for posterior adherent ulcers of the body of the stomach. Pylorectomy may be best for ulcers occupying the pyloric end of the stomach. For hour-glass stomach: gastro-gastrostomy, or resection in continuity, or gastro-jejunostomy. For ulcer in which excision or gastro-jejunostomy cannot be performed, do a temporary jejunostomy and feed per jejunum for several months in order to rest the stomach (Mayo). For duodenal ulcers: gastro-jejunostomy plus enfolding of the ulcer by a few mattress sutures of linen (Mayo). Cover the ulcer with omentum. Following operation the patient should be dieted and rested for weeks or months.

Gastric Hemorrhage.—See Hæmatemesis.

Hyperacidity.—See Hyperacidity.

Hyperæsthesia.—See Hyperæsthesia Gastrica.

Hypersecretion.—See Hypersecretion.

Hypoacidity.—See Anacidity.

Indigestion.—See Dyspepsia.

Inflammation.—See Gastritis.

Neuroses.—See Dyspepsia, Nervous.

Pain.—See Gastralgia.

Prolapse.—See Splanchnoptosis.

Sclerosis.—See Cirrhosis of the Stomach.

Subacidity.—See Anacidity.

Ulcer.—See Gastric and Duodenal Ulcer.

Gastritis, Acute.—Gr. γαστήρ stomach + -ιτις inflammation. Under this caption are included both acute inflammatory gastritis, and simple acute gastric indigestion.

The onset is usually acute, with pain, eructations, salivation, nausea, vomiting, thirst, coated tongue, foul breath, anorexia, and perhaps distension and tenderness of the epigastrium. The vomitus contains undigested food, mucus, bile, and sometimes blood. In infants, fever, nervous disturbances, and prostration occur. Diarrhœa is apt to follow.

In formulating a diagnosis, consider particularly the history of the case, and remember that the symptoms may be the prelude of some acute infectious disease, especially in children.

The Prognosis in simple acute gastritis is usually good, the disturbance usually subsiding in from one to three or more days.

Etiology.—Irritating, indigestible, or decomposed foods; food that is too cold or too hot; overeating; alcohol; poisons, *e.g.*, acids, alkalies, metallic salts, copaiba, male fern, etc., (toxic or corrosive gastritis: see Poisoning); swallowed pus; animal parasites; acute infectious diseases; toxalbumins secreted in the stomach in Asiatic cholera, uræmia, diabetes, gout, and extensive skin burns. Poor health, hot water, chilling of the body surface, dentition, chronic gastritis, and individual susceptibility are predisposing factors.

In infants, the important causes are: milk too rich in fat or in sugar, overeating, sudden change of diet, indigestible food, nervous influences, infections (enteral or parenteral). See also Vomiting.

(There is a rare, fatal, suppurative or phlegmonous gastritis, which is usually not diagnosed until after death. Early incision and drainage would, of course, be the proper treatment.)

A. Treatment in Adults.—The first indication is to empty the stomach, and this is usually accomplished by vomiting, which is effectually induced by the drinking of large amounts of warm water, aided by the finger in the throat. Gastric lavage, (see under Dypepsia.), preferably with a solution of sodium bicarbonate, one teaspoonful to the quart, is better still, if practicable. It is well to give calomel, gr. ii–iii–v, in divided doses (gr. ⅙ every fifteen minutes; or gr. i every hour), followed by a saline. Morphine with atropine, given hypodermically, is of great value for the relief of severe pain and vomiting. Hot applications or a mustard poultice to the epigastrium are grateful. It is well also to flush the colon with normal saline solution (℥i ad Oi).

For persistent vomiting, and for thirst, give the patient bits of ice to swallow, or iced effervescent soda water (for instance, a Seidlitz powder); and dilute hydrochloric acid, gtts., xxx, well diluted (Cohnheim); or bismuth subcarbonate, gr. x, and sodium bicarbonate, gr. xv, in water; or some one of

the remedies enumerated under Vomiting. To supply water, introduce slowly per rectum about one pint of warm normal saline solution every four to six hours.

℞ Pulveris rhei,
Magnesii oxidi,
Sodii bicarbonatis, aa..... gr. v–x
Aquaæ menthæ piperitæ, ad ..... ℥i

M. Sig.—Shake well, and take one ounce every two or three hours, for acid eructations. (Forchheimer.)

Keep the mouth, gums, and teeth clean with an alkaline antiseptic solution (for instance, Dobell's solution, Part 11); and allow no food for at least twenty-four hours (five days, if necessary). The return to food should be gradual—albumen water, cold boiled skimmed milk diluted with lime water, bouillon, fat-free broths, beef tea, Mellin's or Benger's food, soups thickened with sago or tapioca, well-cooked gruels of barley, rice, or farina, eggs boiled three minutes, toast, crackers, zwieback, meat jelly, custards, up to steamed or boiled non-oily fish, and finally ordinary diet. In the beginning of convalescence, particularly if there is distress after eating, it is recommended that dilute hydrochloric acid, 8 to 15 drops in a wineglassful of water, be sipped before, during, or after meals.

B. Treatment in Infants.—Give the child a large amount of lukewarm water to drink, which is usually vomited and thus serves to wash out the stomach. Dennett gives sodium bicarbonate, one level teaspoonful to a glass of water—one tablespoonful every fifteen to thirty minutes, up to 4 or 6 tablespoonfuls every hour; or, perform gastric lavage once, using warm boiled water, or a warm 1 per cent. solution of sodium bicarbonate (say a teaspoonful to the pint). In washing out the infant's stomach, have the child held upright and inclined slightly forward with its arms held to its sides by means of a towel or sheet about the body. The stomach tube consists of a No. 12 to 16 (American scale) or 24 (French scale) rubber catheter, connected by a piece of glass tubing to rubber tubing and a funnel. Depress the base of the tongue with the left forefinger, and pass at least ten inches of the catheter rapidly into the œsophagus and stomach. Then raise the funnel high so as to allow the escape of gas, and then lower it to empty the stomach of its contents. Wash the stomach repeatedly with warm boiled water, using about 2 to 6 ounces at a time, according to the child's age and capacity, until the water returns clear.

Apply hot flannels to the epigastrium. Calomel, gr. $\frac{1}{10}$, every hour, until effectual, may be of service.

Withhold all food for about eight hours, then give thin barley, rice, or albumen water, one-half to one ounce every hour. After twenty-four hours, add beef juice or broth, but give no milk for about three days (Holt); or twelve to eighteen hours (Dennett). Then it should be skimmed and diluted with five or six parts of water (Holt); or, according to Dennett, one part milk and two parts water, without sugar, boiled three minutes, etc. (see Infant Feeding.)

If the baby is nursing, the breast should be withheld for twenty-four hours, "and then nursing allowed for two minutes every three hours, the time of nursing being gradually increased to three, five, and ten minutes, as improvement occurs." (Holt.)

If vomiting persists after thirty-six hours, give nutrient enemata—to a child of one year, 3 to 4 ounces of skimmed milk, peptonized for one hour (see Part 11), every four hours, five enemata daily.

Gastritis, Chronic; Chronic Gastric Catarrh; Chronic Dyspepsia.—Gr. γαστήρ stomach + -ιτις inflammation. The symptoms of chronic gastritis are variable. They occur during the digestive period: epigastric discomfort, fulness and tenderness; eructations of gas; heartburn or cardialgia; coated tongue; fetid breath; bad taste in the mouth; presence in the stomach, four to eight hours after eating, of undigested food, which is apt to decompose and cause gaseous distension, perhaps nausea and vomiting, the vomitus containing mucus and perhaps leucocytes. The appetite is capricious. Neurasthenia, headaches, lassitude, palpitations, and vertigo commonly occur. Exacerbations and remissions occur as the result of dietetic errors. Subacidity (*q.v.*) is much commoner than hyperacidity (*q.v.*). Achylia (*q.v.*) due to atrophy may eventually supervene. Diarrhœa is then apt to ensue. The course of a progressive chronic gastritis is —hyperacidity, subacidity, anacidity, and finally achylia. (For Gastric Diagnosis, Analysis, and Technique, see Dyspepsia).

Prognosis.—This depends upon the stage to which the disease has advanced. Much may be accomplished by proper treatment.

Etiology.—The habitual use of alcohol, tea, coffee, tobacco, bitters and appetizers, purgatives (especially salines) or other irritating drugs, too much water with meals, ice-water, hot foods, too much fat or carbohydrate, and foods difficult of digestion, such as hot breads, pastry, pies, tarts, pan-

cakes, fried foods, spices, nuts, candies, etc.; overeating, too frequent eating, irregular hours of eating, hasty and insufficient mastication, bad teeth, and infectious material from the nose, pharynx, mouth, teeth, and gums, are the common causes.

Other causes are: oft-recurring acute gastritis; other forms of gastric disease, *i.e.*, ulcer, cancer, and gastrectasia; chronic passive congestion due to heart, liver, lung, and kidney disease; disease of the gall bladder, pancreas, or appendix; constitutional diseases, *e.g.*, nephritis, gout, diabetes, anæmia, leukæmia, Addison's disease, tuberculosis, syphilis, general carcinosis, infectious diseases, rickets, malnutrition, marasmus, etc.

A. Treatment in Adults and Children past Infancy.—First inquire into and correct the cause. Consider each possible etiological factor in detail.

Place the patient upon a liquid, soft, or finely divided, bland, easily digestible diet, preferably a mixed diet: fresh, clean milk, in sensitive cases skimmed milk, diluted at least one-third with lime water, Vichy, or Apollinaris water, or with water containing sodium bicarbonate (gr. v–x to the tumblerful of milk and water); perhaps, if well borne, diluted buttermilk, or kumyss, kefir, or matzoon (see Part 11) may be tried. If it is deemed advisable to employ an exclusive milk diet for a time, one or two quarts may be allowed daily, or 6 to 8 ounces every three hours. The milk may be peptonized in severe cases; or it may be boiled. Usually it is better to replace some of the milk with milk soups containing cracker; well-cooked, thin, strained gruels made of rice, barley, farina, arrowroot, or oatmeal; gelatin preparations; and dry toast, crackers, rusks, or zwieback. Later, as improvement occurs, one may gradually add to the dietary light custards, junket, eggs boiled three minutes; boiled minced meat free from fat, skin and connective tissue (calves' brains, sweetbreads, stewed tripe, chicken, beef), boiled or steamed non-fatty fish (pike, perch, flounder, trout, cod, weakfish, fresh haddock, sole, plaice, whiting, turbot, brill), vegetables in purée form, stale bread and fresh butter, stewed sweet fruits (apple sauce, plum sauce).

In flatulence, carbohydrates should be restricted. Little or no water should be taken during meals. Three meals a day are ordinarily sufficient. The patient should rest for one hour before and after eating. He should never bathe immediately after eating. He should, of course, observe the ordinary rules of hygiene: fresh air day and night, adequate rest and exercise, regular hours of eating and sleeping, a daily morning warm bath, if practicable, followed by a cool douche while standing in warm water in a warm room, and cleanliness of the mouth, gums, and teeth. A flannel abdominal binder should be worn.

Each patient must be dieted individually, according to his digestive powers. A brief course of starvation (5 to 6 days), with or without the free drinking of purgative water, may be of value in some cases.

The following foods are strictly forbidden, *e.g.*, black breads, pastries, hot bread, hot buttered toast, doughnuts, pancakes, muffins, crumpets, or other hot cakes, new bread, rich cakes, boiled puddings, sweetened dishes, jam, candy, condiments, spices, sauces, pickles, ices, cold drinks, nuts, coarse vegetables, cabbage, fried potatoes, legumes, raw fruit, stewed acid fruits, such as currants and gooseberries, fruits containing seeds, cheese, fat ham, veal, mutton, pork, bacon, goose, duck, salted meats, tinned meats, smoked meats, smoked fish, salmon and other oilyfish, sausage, forcemeat, liver, kidneys, shellfish, fats, except butter, hard-boiled eggs, rich soups, gravies, fried foods, etc.

At first, it is often advisable to wash out the stomach every day or every other day for a few weeks. This may be done in the morning before breakfast, or about six hours after the midday meal (a very light supper being taken afterward), or on retiring. Plain warm water may be used, or normal saline solution (℥i ad Oi), or a solution of sodium bicarbonate, 1 to 5 teaspoonfuls to the quart (useful where there is much mucus), or boric acid solution, one teaspoonful to the pint (where there is much fermentation). The washing should be continued each time until the fluid returns clear. (See under Dypepsia for technique, etc.).

If lavage is contraindicated or is impracticable, prescribe an alkaline saline water, such as Carlsbad water, or sodium phosphate, or sulphate (Part 11), one hour before meals, for a time; followed by non-purgative alkaline water, such as Vichy, Ems, or Vals, or hot water containing sodium bicarbonate and common salt, aa gr. ii–iii to the ounce. Two or three tumblerfuls may be taken one hour before breakfast, and a tumblerful one hour before each meal and at bedtime. This treatment is very highly recommended by Niemeyer.

For hyperacidity, see Hyperacidity.

For subacidity, anacidity, and achylia, see Anacidity.

For pain, see Gastralgia.

For vomiting, see Vomiting.

For constipation, see Constipation (select what is appropriate).

For fermentation (pyrosis), with the formation of lactic, butyric and acetic acids, employ lavage, or prescribe menthol, thymol, phenol, or creosote (see Drugs).

℞ Bismuthi subcarbonatis..... gr. x–xv
Magnesii oxidi..... gr. iii–v
Sodii bicarbonatis..... gr. v–x
Mucilaginis tragacanthæ..... ℥i
Aquamenthæ piperitæ, ad..... ℥i
M. Sig.—Shake well and take one ounce, t.i.d., half an hour before eating.

Digestives may be prescribed, if desired: pepsin (the powder or scales, not the essence or wine of pepsin); pancreatin; papain or papayotin; malt diastase or taka-diastase (see Part 11 for all drugs). These digestives are said by some to be of doubtful utility. The intestines are capable of carrying on digestion vicariously.

B. Treatment in Infants.—See Infant Feeding, for the proper feeding of these cases. If Holt's methods are followed, the fat should be reduced, as a rule, to 1.5 per cent., the sugar to 3 to 4 per cent. The interval between feedings in infants over three months should be three or four hours.

Gastric lavage (see Inanition for technique), practiced at first daily, and later less often, is of value. Plain warm boiled water, or a solution of sodium bicarbonate, one teaspoonful to the pint, may be used. The lavage is best performed three hours after feeding, and is continued until the return flow is clear. The stomach capacity of an infant of one week is one ounce; six weeks, two ounces; six months, four to six ounces.

Gastritis, Phlegmonous.—Gr. φλεγμονῆ heat, inflammation: suppurative connective tissue inflammation. See under Gastritis, Acute.

Gastritis, Suppurative.—See Gastritis, Acute.

Gastrodynia.—Gr. γαστήρ stomach + ὀδύνη pain. See Gastralgia.

Gastro-Enteritis.—See Gastritis, Diarrhœa, and Enteritis.

Gastroptosis.—Gr. γαστήρ stomach + πτῶσις falling. See Enteroptosis.

Gastrorrhœa; Gastrosuccorrhœa.—Gr. γαστήρ stomach + ῥοία flow; L. *suc'cus*, juice. See Hypersecretion.

Gaucher's Disease.—A rare, chronic disease, said to begin in infancy or childhood but found also in adults, characterized clinically by progressive enlargement of the spleen, and subsequently of the liver, discoloration of the skin of the exposed parts of the body, conjunctival thickening, leucopenia, and a tendency to hemorrhages, without jaundice, without superficial lymphatic enlargement, and rarely ascites. Secondary anemia may occur. The spleen, liver, bone marrow and lymph nodes contain characteristic large cells with a peculiar kind of cytoplasm (Gaucher cells), which are evidently modified cellular reticulum. These cells sometimes apparently fuse into multinuclear syncytial masses.

The treatment is splenectomy.

Gavage.—Fr. See under Inanition, Simple Acute.

General Paralysis of the Insane.—See Dementia Paralytica.

Geographic Tongue.—See Part 5.

Gerlier's Disease.—See Kubisagari.

German Measles; Rubella; Rubeola; Rötheln.—L. *ru'ber*, red. A common epidemic, contagious, acute infectious disease of children, characterized by an incubation period of 14 to 21 days (limits 5 to 10 to 22 days), followed by very few symptoms other than enlargement of the post-cervical lymph-glands and a polymorphous, rose-red rash, sometimes scarlatiniform or morbilliform, but consisting, typically, of pinhead to pea-sized maculo-papules, often becoming confluent, and fading after one to three days. Most marked on the face.

Treatment.—The disease is usually very mild. The treatment is symptomatic. Quarantine the patient two weeks from the first appearance of the rash (see Disinfection).

Gibraltar Fever.—See Mediterranean Fever.

Giddiness.—See Vertigo.

Gigantism.—Gr. γίγας giant. See Acromegaly.

Gingivitis.—L. *gingi'va*, gum. The gums are red, swollen, spongy, and tender.

Etiology.—Stomatitis; pyorrhœa alveolaris; dental caries; calcareous dental deposits; overlapping fillings; mechanical appliances; impacted food; the local use of arsenious acid, sulphuric acid, carbolic acid, etc.; tobacco; mercury; lead; phosphorus; scurvy; pregnancy; rickets; syphilis; diabetes; gout; febrile diseases.

Treatment.—Attend to the cause. The services of a dentist may be required. The teeth should be kept clean with water, castile soap, and a soft brush or cloth, and an alkaline antiseptic mouth-wash, such as Dobell's solution (see Part 11), should be used frequently. A good astringent mouth-wash consists of tincture of myrrh, ℥i in water Oi.

Once daily the gums may be painted with

tincture of iodine; or a strong solution of silver nitrate; or one of the following:

℞ Tincturæ krameriæ,
Tincturæ iodi, aa..... ℥v
Tincturæ myrrhæ..... ℥iiss

℞ Tincturæ krameriæ,
Tincturæ myrrhæ, aa..... ℥ss

See also Scurvy.

Glanders.—See Equinia in Skin Diseases, Part 5.

Glandular Fever.—A mild, contagious and infectious, endemic and epidemic disease of children, characterized by an acute onset with fever, tonsillar and pharyngeal congestion, and later cervical adenitis, the latter lasting from one to four weeks. Sometimes other glands than those of the neck are involved. Suppuration rarely occurs.

Treatment.—Isolate the patient (see Disinfection). Put him to bed in a well-ventilated room free from draughts. Open the bowels with divided doses of calomel. The diet should be liquid until the fever subsides. Employ antiseptic sprays and gargles (Dobell's solution), and hot or cold applications to the neck. Freely incise suppurating glands. Remember the possibility of nephritis, otitis media, and retropharyngeal abscess occurring as complications. Give tonics of iron and strychnine during convalescence (for drugs see Part 11).

Glenard's Disease.—See Splanchnoptosis.

Glossitis.—Gr. γλῶσσα tongue + -ιτις inflammation. Inflammation of the tongue may be acute or chronic, superficial or parenchymatous. The latter is sometimes unilateral (hemiglossitis). The term linguopapillitis designates an affection of the fungiform papillæ of the tip and margin of the tongue, characterized by pain and the presence of minute ulcers revealed only by the magnifying glass. Glossitis papillaris, so-called, is limited to the circumvallate papillæ, and causes a sticking sensation in the throat, slight difficulty in swallowing, and cough. Geographic tongue, Leukoplakia, and Glossodynia Exfoliativa are considered in Part 5, Skin Diseases.

Etiology.—Dental caries; sharp-edged teeth; stomatitis; burns; insect bites; biting of the tongue in epileptic seizures, etc.; whooping cough, producing ulcer of the frenum; tobacco; alcohol; mercury; iodine; lead; spices; tuberculosis; syphilis; actinomycosis; cancer; diphtheria; foot-and-mouth diseases; herpes; thrush; constitutional diseases—fevers, gastro-intestinal disorders, gout, pernicious anæmia, etc.

Treatment.—Attend to the cause. Flush out the bowels by means of calomel or castor oil, followed by a saline (Part 11). Keep the mouth, teeth, and gums clean with brush, castile soap and warm water, and an astringent mouth-wash, such as potassium permanganate, 1 : 300; or the following:

℞ Acidi borici, vel sodii biboratis, vel
sodii bicarbonatis..... ℥ii
Tincturæ myrrhæ..... ℥ss
Aquæ, q.s., ad..... ℥viii
M. Sig.—Mouth-wash, to be mixed with an equal amount of warm water.

Paint the inflamed surface night and morning with a solution of chromic acid, gr. v–x ad ℥i. Swab cracks, fissures, and ulcers, once daily, with silver nitrate solution, alum, gr. xv ad ℥i, or chromic acid solution. Ionic medication (*q.v.*) has its advocates.

In acute parenchymatous glossitis, with great pain, swelling, and fever, incise the tongue with a sharp knife on each side, about two-thirds of an inch from the median raphe, and to the depth of one-third of an inch, in order to reduce the swelling. Abscesses should be freely opened. Should a portion of the tongue become gangrenous, cut away the dead parts, and apply pure carbolic acid, followed by the frequent application of iodoform.

Forbid alcohol, tobacco, and very hot or cold or otherwise irritating foods.

Touch the minute ulcers of linguopapillitis with the galvano-cautery aided by a magnifying lens.

Tuberculous nodules, even though ulcerated or fissured, should be excised by elliptical incisions, and the glands beneath the jaw removed. If the ulcers are secondary to pulmonary tuberculosis, and operation is not feasible, employ antiseptic astringent mouth-washes, and rub into the ulcers, three or four times daily, a mixture of iodoform, gr. i, with borax, gr. iii. Incise and curette tuberculous abscesses.

A chronic ulcer with thickened and indurated edges should be freely excised by means of an elliptical incision, which should include a wide margin of healthy tissue and the underlying muscle. Bring the cut edges together with silk.

Glossodynia.—Gr. γλῶσσα tongue + ὀδύνη pain. **Causes.**—Rheumatism; trigeminal neuralgia; hysteria; tabes; insanity; dental caries; artificial teeth; granular pharyngitis with hypertrophy of the lingual tonsil and the posterior pillars; lingual varices; glossitis; glossodynia exfoliativa.

Glossodynia Exfoliativa.—See Skin Diseases, Part 5.

Glosso-Labio-Laryngeal Paralysis.—Gr. γλῶσσα tongue; L. *la'bium*, lip; Gr. λάρυγξ larynx. See Bulbar Paralysis, Acute and Chronic.

Glosso-Pharyngeal Nerve.—Gr. γλῶσσα tongue; φάρυγξ pharynx. The ninth cranial, or glosso-pharyngeal nerve, transmits taste impulses, especially from the posterior part of the tongue, and is concerned also with deglutition, supplying the middle constrictor of the pharynx and the stylo-pharyngeus muscles. It is involved in bulbar paralysis (*q.v.*), and may be involved in meningitis, syphilis, and new growths at the base of the skull.

Test the sense of taste for bitter, sweet, sour, and salt, using strips of filter paper moistened with solutions of quinine, sugar, vinegar, and common salt, with which the protruded tongue is touched.

Glottis, Œdema of the.—See Throat Diseases, Part 9.

Spasm of the.—See Throat Diseases, Part 9.

Glycosuria.—Gr. γλυκύς sweet + οὖρον urine. See Causes of Glycosuria under Diabetes Mellitus; see Urinalysis.

Goitre, Exophthalmic.—See Exophthalmic Goitre.

Goitre, Simple.—Fr. goître. Simple goitre is a chronic enlargement of the thyroid gland, of unknown cause, occurring sporadically, endemically, and even epidemically in certain regions of the earth called "goitrous districts." A goitrous thyroid contains much less iodine than the normal thyroid, and therefore probably represents a compensatory hypertrophy due to thyroid insufficiency. Focal infection is cited as a possible cause.

The enlargement sometimes produces pressure symptoms. Dyspnœa is caused by pressure upon the trachea, veins, or recurrent laryngeal nerves. In the latter case, severe attacks of dyspnœa occur (goitre asthma).

A sudden increase in the size of a goitre may be due to traumatism, strain, an infectious disease, inflammation, or a new growth.

(For other causes of enlargement of the thyroid, see Thyroid Enlargement).

Treatment.—In endemic cases, leaving the goitrous district, or boiling the drinking water, may possibly cause the enlargement to disappear. Iodine used internally or externally, and thyroid extract, are often curative. Small recent, diffuse, parenchymatous goitres in the young, and also nodular (adenomatous) goitres without degeneration, usually disappear under iodine treatment in about two weeks. Colloid goitres are reduced only after prolonged treatment. Cysts are not affected.

℞ Sodii vel potassii iodidi..... (gr. v per dose)
Aquæ destillatæ, aa..... ℥ss

M. Sig.—Five drops, well diluted in milk or water, t.i.d.p.c., gradually increased, if need be, to three or four times this amount.

℞ Tincturæ iodi..... ℥i

Sig.—Five drops well diluted t.i.d.p.c. gradually increased if need be to 15 to 20 drops t.i.d.

℞ Liquoris iodi compositi..... ℥ss

Sig.—Drops one to three, well diluted, gradually increased to gtt. x–xx, t.i.d., every other day.

During the administration of iodine or thyroid extract, watch the patient closely for symptoms of hyperthyroidism, *e.g.*, irritability, insomnia, tremor, palpitations and tachycardia, sweating, asthmatic attacks, vomiting, diarrhœa, weakness, emaciation.

Local applications of iodine, in the form of tincture of iodine, unguentum iodi, or iodine-vasogen or iodine-petrogen (see Part 11) are often effectual. The ointment should be well rubbed in each day. Adrenalin compresses worn at night are recommended. The X-ray may be tried. Do not neglect rest and proper hygiene.

The following forms of goitre require operative removal, viz., cystic, fibroid, degenerated nodular, hemorrhagic, and calcified goitres; goitres which are painful or sensitive on pressure; goitres with marked cardiac or pressure symptoms; goitres of sudden and rapid growth (probably malignant); old goitres generally; and those which resist iodine medication.

Before operating for goitre, see that the heart, lungs, and kidneys (see Urinalysis) are functioning properly. Iodothyrin and arsenic are recommended for inoperable malignant cases.

Gonococcus Infection.—Besides urethritis, the gonococcus may cause periurethral abscess, cowperitis, prostatis, epididymitis, cystitis, pyelitis, rectitis, vulvo-vaginitis, bartholinitis, endocervicitis, metritis, salpingitis, ovaritis, peritonitis, arthritis, synovitis, bursitis, periostitis, iritis, ophthalmia, stomatitis, pleurisy, pericarditis, meningitis, endocarditis, septico-pyæmia.

Treatment.—Attend to the primary infection, *q.v.*, in its appropriate Part, as well as to the complications, *q.v.* Open the bowels,

and prescribe rest, fresh air, and a bland, nutritious diet.

The antigonococcus serum and vaccine may possibly be of some benefit. Antigonococcus serum is antibacterial in its action. Inject deeply, but not necessarily into the muscle, 2 to 4 c.c. every one, two, or three days, gradually increased to 6 to 8 c.c. (See Anaphylactic Shock). Say Thomas and Ivy: Antigonococcus serum "is of little or no value in acute and chronic urethritis, prostatis, and conjunctivitis, but has beneficial effects in cases of gonorrhœal arthritis, endocarditis, peritonitis, and septicæmia."

If a vaccine is used, it may be sensitized (see vaccines in Part 11), in order to avoid toxic symptoms. Give three subcutaneous or intramuscular injections on successive days, of 20, 50, and 100 million dead organisms. If no reaction occurs, give 200, 500, and 1000 million on the fourth, fifth, and sixth days. Should a reaction appear after any one of these injections, wait fourteen to twenty-one days before beginning another series (McDonagh). McDonagh says: "The sensitized vaccines are most useful in acute cases treated early, and speedily effect a cure." "Chronic cases may often be improved enormously by vaccines, but after they are stopped the disease remains latent for a time, only to break out again; therefore a cure should not be guaranteed." He says that a vaccine to be potent should be no older than ten days. Similar remedial effects have been obtained by the injection of antityphoid vaccine (Bloch), so that it is possible that vaccines are not specific in their action.

Gout.—A disorder of proteid metabolism (possibly of purin catabolism, due to failure of the liver to destroy uric acid), characterized by an excessive accumulation of uric acid in the blood (uricæmia), and its occasional deposition, in the form of sodium biurate, in the articular cartilages and periarticular tissues, the subcutaneous tissues, tendons, and the aponeuroses, with resulting constitutional and arthritic symptoms.

The subcutaneous deposits, called tophi, are especially common in the ears. When occurring elsewhere, they resemble rheumatic fibroid nodules. They contain the characteristic needle-shaped sodium biurate crystals.

Clinically, three types of gout are recognized, acute, chronic, and irregular.

Acute gout is characterized by the periodic occurrence, at intervals of months or years, of acute articular pain, swelling, and a shiny redness, usually affecting the metatarso-phalangeal and tarsal joints, especially of the big toe, often preceded by indigestion, irritability of temper, etc., and lasting about five to ten days. The patient suffers worse at night. During the attack, the urinary output of uric and phosphoric acids is increased. The urine is scanty, dark-colored, and acid, and deposits red urates on cooling. Albuminuria and glycosuria may be present (see Urinalysis.)

In rare instances, coincidentally with a sudden disappearance of the articular symptoms, serious internal symptoms may occur, *e.g.*, vomiting, diarrhœa, and abdominal pain; or dyspnœa, precordial pain, irregular heart action, palpitations, and syncopal or anginal attacks; or headache; or delirium, muscular twitchings, and coma (retrocedent gout).

Chronic gout is characterized by the frequent recurrence of acute attacks, affecting many joints, and the appearance of tophi and persistent thickening of the joints, due to the repeated deposition of sodium and calcium biurate ("chalk stones"). Digestive disturbances and muscular cramps are common. Eventually arteriosclerosis, myocarditis, cardiac hypertrophy, chronic interstitial nephritis, and perhaps emphysema, supervene.

Irregular gout, or masked gout, or lithæmia, or the gouty or uric acid diathesis, as it is variously called, designates a gouty state without articular symptoms, the commonest manifestations of which are reputed to be the following: eczema, recurrent pharyngitis, conjunctivitis, episcleritis, "hot or itching eyeballs," iritis, glaucoma, biliousness, headaches, neuralgias, migraine, "hot or itching feet at night," muscular cramps, paroxysmal tachycardia, angina pectoris, myocarditis, arteriosclerosis, phlebitis, asthma, chronic bronchitis and emphysema, nephrolithiasis, chronic interstitial nephritis, purulent urethritis, phosphaturia, albuminuria, intermittent glycosuria, obesity.

Etiology.—Heredity; alcohol, particularly the fermented liquors (beer, ale, and wines), not so much the distilled liquors (whiskey, brandy, rum, gin); overeating, especially of nitrogenous foods; insufficient exercise; lead. Worry or mental shock may precipitate an attack.

Prognosis.—With proper care much may be accomplished.

Treatment.—In an acute attack, put the patient to bed in a warm but well-ventilated room, open the bowels thoroughly with

calomel, gr. ii–viii, followed by a saline, elevate the affected joint and wrap it up thickly in cotton-wool covered with oiled silk, and prescribe wine or tincture of colchicum, ♏xv–xxx in water, every two hours for eight or ten doses, then every four hours for three or four days, or until the pain is relieved or symptoms of poisoning occur, *e.g.*, nausea, vomiting, diarrhœa, and cardiac depression.

Colchicine or colchicine salicylate, gr. $\frac{1}{100}$, every four hours, may be used instead, if desired.

If colchicum affords no relief, sodium salicylate or aspirin, gr. x–xx, every two to four hours, until relieved, may be tried; or phenacetin, antipyrine, or morphine (see Part 11.)

Alkaline waters should be drunk freely: citrate, acetate, or bicarbonate of potassium, gr. xx–xxx, in a glass of water, every four hours, until the urine is rendered alkaline.

In the presence of fever, the diet should consist of milk and barley water; later, as the fever subsides, junket, custards, well-cooked rice or sago, with cream, stale white bread and fresh butter, soft eggs boiled three minutes, fresh boiled or steamed fish, chicken, crisp bacon, and oysters.

For very severe pain, apply lead and opium wash (*q.v.*); or alcohol covered with oiled silk; or menthol, ʒiv, in spirits of camphor, ʒvi; or camphor-menthol (three parts of menthol rubbed up with two parts of camphor); or ichthyol, gr. x, ext. opii, gr. v–xv, ext. belladonnæ, gr. xlv, ad lanolin ʒi, applied once or twice daily; or tinct. opii ʒv, ol. gaultheriæ ʒi, chloroform ʒiss—shake and paint on several times a day. Bier's passive hyperæmia (see Inflammation), employed for five minutes several times a day is also recommended.

One may try ionic medication (*q.v.*). Employ a hot solution of sodium salicylate, 1 to 3 per cent., at the cathode, and a current of 30 to 40 milliampères for twenty minutes, every other day. Guilloz (quoted by Lewis Jones) recommends that the affected limb be immersed in a porcelain basin containing a 2 per cent. solution of lithium chloride, with just enough lithium hydrate to render the solution alkaline. The positive electrode is placed in the solution, and a large negative electrode over the lumbar region. The current is very slowly increased to 150 to 200 milliampères, and continued for twenty to thirty minutes. The treatment is repeated once or twice every day.

In the intervals between attacks, and in chronic and irregular gout, enjoin the following regimen: Fresh air day and night, regular hours of eating and sleeping, moderate daily exercise in the open air, a daily warm or hot bath, an occasional Turkish bath if the heart is good, warm clothing, free bowel activity—a morning saline, if need be, such as sodium phosphate, or Carlsbad salts—copious water drinking, temperance in eating, and avoidance of worry. The following foods are interdicted (the most of them because of their rich purin content, some because of indigestibility or of acidity): alcohol, game, sweetbreads, liver, kidney, brain, sausages, smoked meats, meat extracts, meat soups, broths, gravies, salt fish, fish roe, caviar, crabs, lobsters, sharp cheese, mushrooms, peas, beans, lentils, oatmeal, celery, onions, garlic, radishes, asparagus, cucumbers, sorrel, tomatoes, cabbage, hot breads, corn breads, pastries, candies, preserves, much salt, vinegar, condiments and spices, tea, coffee, cocoa, bananas, strawberries, cherries, dates.

The following foods are allowed: milk, buttermilk, koumyss, junket, cream, butter ($2\frac{1}{2}$ to $3\frac{1}{2}$ ounces a day—Ebstein), eggs, custard, mild cheese, olive oil, white bread, rice, macaroni, tapioca, sago, potatoes, spinach, sprouts, beet tops, cauliflower, lettuce, chicken, crisp bacon, fresh fish, oysters, white and red meat in moderation, pears, green figs, mild oranges. A bitter tonic (see Anorexia), may be given before meals if the patient is debilitated.

No more nor less than $1\frac{1}{2}$ quarts of water should be drunk daily, before and between meals, says Croftan. To the water may be added effervescent lithium carbonate or citrate, gr. v–x, in tablet form, three or four times a day; or potassium citrate, acetate, or bicarbonate, gr. x–xx, three or four times a day; or calcium carbonate, gr. xv–xx, t.i.d., the latter being highly recommended by Croftan for its power to keep uric acid in solution.

A brief course of starvation (five to six days), with or without the free drinking of purgative waters, may be of great value.

Atophan causes an increased excretion of uric acid, and is for this reason used: ℞ Atophan, tabellæ, gr. viiss, 4 to 6 tablets a day, with plenty of water (see Part 11), and perhaps with potassium bicarbonate, ʒiss daily. Atophan is said to remove pain in acute gout more promptly than colchicum and without undesirable by-effects.

For chronic gout, Garrod very highly extols guaiacum (Part 11.)

℞ Pulveris guaiaci. ℥i (about gr. 1¼ per dose)
Pulveris rhei.... ℥ii (about gr. iiss per dose)
Potassii bitartratis..... ℥i (about gr. x per dose)
Sulphuris præcipitati..... ℥ii (about gr. xx per dose)
Mellis..... Oi
Pulverem myristicam..... i

M. Sig.—Shake well and take two large teaspoonfuls night and morning.—"*The Chelsea Pensioner.*" (Yeo.)

Yeo praises the intermittent use of sodium iodide, gr. v–x, well diluted, t.i.d.p.c. (see Part 11), "in cases with albuminuria and well-marked vascular and renal changes," and "in chronic and subacute arthritic affections." Small doses of thyroid extract (*q.v.*) given over a prolonged period, are said to be of considerable benefit.

A sojourn of several weeks at one of the following mineral springs is of the greatest benefit: Saratoga, Bedford, and White Sulphur in the United States; Buxton, Bath, Strathpeffer, and Llandrindod in Britain; Aix-les-Bains, Contrexeville and Vichy in France; and Carlsbad, Wildbad, Badenweiler, Homburg, Schlangenbad, and Marienbad, etc., in Germany.

Grain Poisoning.—See Poisoning.

Graves's Disease.—See Exophthalmic Goitre.

Grippe.—See Influenza.

Ground Itch.—See Anklylostomiasis.

Guinea-Worm Disease.—See Dracontiasis in Skin Diseases, Part 5.

Gums, Inflammation of the.—See Gingivitis.

Habit Chorea.—See Habit Spasm.

Habit Spasm; Habit Chorea; Tic; Tic Convulsif.—The habitual occurrence of a sudden, quick, purposive, involuntary, localized muscular action resembling an "automatic gesture," *e.g.*, blinking of the eyes, elevation of the eyebrows, frowning, shrugging of the shoulder, protrusion of the tongue, jerking of the head or hands, bowing, nodding, sniffling, sighing, grimacing, laryngeal cough, echolalia, coprolalia, etc.

Etiology.—Neurotic temperament; mental strain, worry, or shock; pyschogenic habit; debility; reflex irritation, due to dental caries, adenoids, nasal obstruction, aural disease, eyestrain, phimosis, worms, skin irritation (caused by woolen underwear, suspension of the clothing from the shoulders causing shoulder shrugging, etc.), etc.

Facial spasm may also be due to nerve irritation caused by a new-growth, a brain lesion, etc.

The Prognosis is uncertain.

Treatment.—Enjoin correct hygiene, regular hours of eating and sleeping, adequate rest and exercise, rest before and after meals, frequent bathing, fresh air day and night, regulation of the bowels, and a bland, nutritious diet, together with such tonics as iron, arsenic, strychnine, and quinine (see Part 11). Interdict tea and coffee. Remove all possible sources of reflex irritation. Encourage the patient to inhibit the movements.

In intractable cases, one may try the injection of alcohol into the trunk of the facial nerve near the stylomastoid foramen, with the hope that, following recovery from the resulting paralysis, the spasm may not return. Or, one may divide the nerve near its exit from the skull, and anastomose the peripheral end with the spinal accessory, or better, the hypoglossal nerve.

Hæmarthrosis.—Gr. αἷμα blood + ἄρθρον joint. Spontaneous blood extravasation into a joint occurs in hæmophilia, purpura, and scurvy. See Hæmophilia.

Hæmatemesis.—Gr. αἷμα blood + ἔμεσις vomiting. The blood in hæmatemesis is apt to be dark in color, acid and clotted; whereas in hæmoptysis it is bright red in color, frothy, alkaline, and usually associated with muco-pus.

Etiology.—Gastric and duodenal ulcer; gastric cancer; gastritis; gastric traumatism, due to the strain of vomiting, the passage of a stomach tube, artificial distension with carbon-dioxide gas, corrosive poisons, abdominal operations; passive congestion, due to hepatic cirrhosis, syphilitic hepatitis, portal thrombosis, very rarely thrombosis of the hepatic veins, compression of the portal vein, heart disease, lung disease; rarely gastric or œsophageal varices; neighboring abscesses, ulcers, or fistulæ opening into the stomach; cancer of the gall bladder; pancreatic inflammation or tumor; miliary aneurysms, associated perhaps with arteriosclerosis; leaking or rupture of an aortic or abdominal aneurysm; splenic enlargement (see Splenomegaly, for causes); vicarious menstruation; altered blood states: profound anæmia, leukæmia, purpura, scurvy, hæmophilia, cholemia, phosphorus poisoning, acute yellow atrophy, yellow fever, malaria, uræmia, septicopyæmia, hemorrhagic form of the exanthemata, typhoid fever, typhus fever, relapsing fever, etc., hæmatemesis neonatorum; epilepsy; general paresis; tabes; meningitis; hysteria; swallowed blood arising from the nose, pharynx, mouth, œsophagus, or the mother's breast.

Exclude fruit, wine, fruit juices, red

vegetables, red sausage, coffee, cinnamon, iron, bismuth, hæmoptysis. If the blood has remained in the stomach for some time before being vomited, it may resemble coffee grounds. In doubtful cases examine the vomitus microscopically, spectroscopically, or chemically (see the benzidin test under Gastric and Duodenal Ulcer.)

Treatment of the Hemorrhage Itself.—Enjoin absolute rest in bed, including feeding with a spoon and the use of the bed pan. Lower the head and elevate the foot of the bed, to prevent syncope. Morphine hypodermically is advised. Apply an ice-bag to the epigastrium, suspended from a bed-cradle. Give ice to suck but not to swallow. Administer one of the following hæmostatics:

1. Adrenalin chloride, 1 : 1000, 30 drops in a teaspoonful or tablespoonful of water every hour for two or three doses; or 10 to 20 to 30 drops every three or four hours (see Part 11).

2. Ol. terebinthinæ rectificati, one tablespoonful beaten into a fine emulsion with the white of an egg, one teaspoonful every hour (F. C. Moore: highly praised).

3. Sterile 10 per cent., gelatin (Merck) ℥x, hypodermically, repeated at least once a day.

4. Antidiphtheritic serum, 2000 units, or normal horse serum, 15 c.c., repeated in 3 to 12 hours. (Fulton.)

5. Ergot subcutaneously.

6. Calcium chloride, ℥i–ii, per rectum, daily.

7. Hot rectal injections.

Allow no food by mouth or rectum for four or five days (in infants for twenty-four hours after the hemorrhage has ceased); but administer normal saline solution (℥i ad Oi) per rectum, by the Murphy drop method (about two quarts in twenty-four hours; dextrose, 2 to 5 per cent., may be added to prevent acidosis), in order to relieve thirst and avoid gastric peristalsis. Keep the mouth clean.

For faintness, sprinkle the face with cold water, apply smelling salts to the nostrils, and hot bottles to the feet. If the heart is very weak, inject, hypodermically, ether, ♏xx–xxx; or camphor, gr. i–ii, in olive oil, ♏xv; give gum-salt solution (see Part 11); and bandage the limbs.

For subsequent anæmia, prescribe rest, fresh air, nutritious food, and iron, if well borne (see Anæmia).

Hæmatochyluria.—Gr. αἷμα blood + χυλός chyle + οὖρον urine. See Chyluria.

Hæmatoma of the Sternocleidomastoid.—See Sternocleidomastoid Hæmatoma.

Hæmatomyelia and Hæmatorrhachis.—Spinal Hemorrhage.—Gr. αἷμα blood; μυελός marrow, ῥάχις spine. **I. Hæmatorrhachis** (Spinal Meningeal Apoplexy; Hemorrhage into the Spinal Membranes).—The onset is usually sudden. In traumatic cases there is severe pain in the back, tenderness along the whole length of the spine, and shock. Symptoms of meningeal irritation supervene, *e.g.*, spinal rigidity, involuntary spasmodic muscular contractions, and root pains and paræsthesiæ in the distribution of the spinal nerves involved (see Spinal Nerves; and Spinal Cord Localization.) In severe cases meningeal pressure symptoms occur, *e.g.*, atrophic paralysis and anæsthesia of the arms and trunk or the legs, depending upon the site of the hemorrhage, with retention or incontinence of urine and fæces. The cerebrospinal fluid is blood-stained. Hæmatomyelia may, of course, also be present.

"The disease reaches its height in the course of a few hours or a day or two," and death may occur. If the patient survives this period, he usually recovers within two or more months.

Etiology.—Traumatism, due to vertebral fracture or dislocation, concussion produced by falls on the head, feet, or sacrum, great muscular exertion, excessive coitus, convulsions, urgent dyspnœa, difficult parturition, obstetrical injuries to the child; septic meningitis; acute infectious fevers; hæmophilia, purpura, scurvy; rupture of an aneurysm of the vertebral or basilar artery.

II. Hæmatomyelia (Hemorrhage into the Spinal Cord).—Characterized by the sudden occurrence of flaccid paralysis and anæsthesia below the level of the hemorrhage (see Spinal Cord Localization), with or without pain, and with complete retention of urine and fæces, followed, after a few days, by spasticity of the lower limbs, when the cervical or dorsal region is affected, and incontinence of urine, and perhaps alternating fecal incontinence and constipation.

In a unilateral lesion a Brown-Séquard paralysis results, *i.e.*, flaccid paralysis and anæsthesia at the level of and on the same side as the lesion; spastic paralysis and loss of muscle sense ("ability to appreciate the size, consistency, weight, and shape of an object"), but retention of the senses of pain, temperature, and touch, on the side of and below the level of the lesion; and loss of the perception of pain and temperature below the level of the lesion on the opposite side.

If the patient survives the first few days,

he usually recovers, with perhaps more or less of residual paralysis.

Etiology.—The same as that of hæmatorrhachis, including also cold or exposure, tumors, myelitis, and syringomyelia. Trauma is the commonest cause. The cervico-dorsal enlargement is most commonly affected.

Treatment of Spinal Hemorrhage.—The prone position is perhaps preferable. If not intolerable, an ice-bag may be applied to the spine for the purpose of arresting the hemorrhage. Enjoin absolute rest, including feeding with a spoon and the use of the bedpan and urinal. Give morphine hypodermically. Guard against bed-sores (*q.v.*,); and also against cystitis by means of the administration of urotropin, gr. vii, t.i.d., regular aseptic catheterization, and irrigation of the bladder with warm sterile boric acid solution, a heaping teaspoonful to the pint. Employ aperients and enemata for the bowels. The diet should be bland and nutritious. T. G. Stewart advises the use of potassium iodide, gr. x, well diluted, t.i.d. (see Part 11), and Fowler's solution, ♏iii, well diluted, t.i.d., for a period of six weeks.

In traumatic cases, an X-ray picture should be taken, and if it shows compression of the cord by displaced bone, an operation should be performed, otherwise not. In fracture the spine may be immobilized by means of sand-bags, extension apparatus, plaster jacket, or braces (see Pott's Disease, in Orthopædics, Part 10). In applying a plaster jacket, the patient is suspended prone in a hammock, or between two tables, so as to produce extension and correct deformity (see Pott's Disease). An anæsthetic may be required.

Six to eight weeks after all acute symptoms have subsided, employ electricity, gentle massage, and passive movements to restore tone to the flaccid muscles (see Poliomyelitis); for the spastic muscles, only massage and warm applications. As long as a muscle retains its faradic irritability, there is hope of its recovery; but if it does not respond at all to either galvanic or faradic stimulation, it can not recover. In lumbosacral hemorrhage, the paralysis of the anal and vesical sphincters is likely to be permanent.

Hæmatoporphyrinuria.—Gr. αἷμα blood + πορφύρεος purple + οὖρον urine. See Hæmoglobinuria.

Hæmatorrhachis.—See Hæmatomyelia and Hæmatorrhachis.

Hæmaturia.—See Part 3, Genito-Urinary Diseases.

Hæmochromatosis; Bronzed Diabetes.—Gr. αἷμα blood + χρῶμα color. A very rare affection, characterized by pigmentation of the skin and viscera with hæmosiderin and hæmofuscin, cirrhosis of the liver, chronic interstitial pancreatitis, and enlargement of the spleen. When the pancreatic islands of Langerhans become involved, diabetes ensues. The patient usually dies "within a year after the appearance of glycosuria." (A. O. J. Kelly.)

Treatment.—In the early stages of the disease, the treatment is that of cirrhosis of the liver; in the later stages it is that of diabetes.

Hæmoglobinuria.—Gr. αἷμα blood + globin + οὖρον urine. Hæmoglobinuria denotes the presence of blood coloring matter in the freshly voided urine (hæmoglobin, methæmoglobin, hæmatoporphyrin). It is distinguished from hæmaturia by the absence of red corpuscles in the sediment of the centrifuged urine.

Etiology.—Transfusion of blood from a different species of animal; certain hæmolytic poisons: potassium chlorate, carbolic acid, sulphuric acid, hydrochloric acid, pyrogallic acid, arseniuretted hydrogen, aniline, acetanelid, antipyrine, phenacetin, lactophenin, sulphonal, trional tetronal, pyridine, toluylendiamine, solanine, saponin, muscarine, naphthol, phosphorus, lead, snake-venom, ether, chloroform, nitrites, bile salts, carbon monoxide, tuberculin; fevers: malaria, black-water fever, syphilis, scarlet fever, yellow fever, typhoid fever, erysipelas, acute rheumatism, croupous pneumonia, pulmonary tuberculosis; pleurisy with effusion; pericarditis; Addison's disease; exophthalmic goitre; Raynaud's disease; angioneurotic œdema; hepatic cirrhosis; hydroa æstivale; intestinal hemorrhage; extensive burns; exposure to cold; traumatism; muscular and mental overexertion; Winckle's, usually fatal, epidemic hæmoglobinuria of the newborn, with jaundice and cyanosis.

Treatment.—Put the patient to bed, open the bowels, restrict the diet, and give large quantities of water to dilute the blood and wash out the kidneys. Oxygen inhalations (see under Pneumonia) may be given.

As a preventive against paroxysmal hæmoglobinuria the patient should be kept warmly clad, and should avoid causal influences. Residence in a warm climate is best. Amyl nitrite (Part 11) is recommended for the purpose of aborting an attack.

In sulphonal or trional hæmatoporphyrinuria the prognosis is grave. Sodium bicarbonate should be given in large doses (see Acidosis).

Hæmoglobinuria, Epidemic.—See under Hæmoglobinuria, above.

Hæmoglobinuric Fever.—See Black Water Fever.

Hæmopericardium.—Gr. αἷμα blood + περί around + καρδία heart. A non-inflammatory effusion of blood into the pericardial cavity, due to (1) penetrating wounds caused by a foreign body or a fractured sternum or rib; (2) crushing wounds; (3) traumatic rupture of the heart; (4) spontaneous rupture of the heart, due to strain; (5) rupture of an aneurysm of the aorta or of a coronary artery; (6) malignant erosion of a blood-vessel.

In the pericarditis of tuberculosis, cancer, nephritis, scurvy, alcoholism, grave fevers, and senility, the exudate may be blood-stained.

The diagnosis of hæmopericardium is made from the combination of sudden symptoms of internal hemorrhage (increased pulse-rate, faintness—collapse) with signs of pericardial effusion.

See Hemorrhage. A ruptured heart may be successfully sutured.

Hæmophilia.—Gr. αἷμα blood + φιλεῖν to love. An hereditary hemorrhagic disposition, usually transmitted to the males through the females, characterized by a tendency to marked bleeding, either spontaneous or traumatic, due to deficient blood coagulability. The bleeding may occur, apparently, in or from any part of the body. The joints, especially the knee, are frequently affected (hæmarthrosis). Following repeated hemorrhages into the joint there results a chronic arthritis, followed by ankylosis and deformity.

There is also an acquired hemorrhagic disposition.

Treatment.—The slightest traumatism (even violent exertion), and surgical operations should be strictly avoided. The mouth, gums, and teeth should be kept clean with castile soap, warm water, and brush, and a dentist consulted on the first signs of dental caries, in order to avoid the need of having a tooth extracted. With painful teeth, the nerve may be destroyed. Abscesses should be opened through the tooth.

A daily cold douche, taken standing in warm water, and sea-bathing are of prophylactic value. A warm climate is recommended because the disease is rare in warm climates. Milk is recommended as a food for increasing the coagulability of the blood. Calcium lactate may be prescribed, but for not more than three days in succession, since its continued administration is said to diminish the coagulability of the blood.

℞ Calcii lactatis (Marck's or Squibb's soluble) ..... gr. x–xx

Fiat pulvis una, et dispense in charta cerata. Mitte talis 100.

Sig.—One powder three to six times a day, "for a day or two every week."

Sodium sulphate and thyroid extract are also recommended (see Part 11.)

The tendency to bleed may disappear in later life.

To check bleeding, exert compression with tampons of gauze, either dry or soaked with adrenalin solution, 1 : 1000; or cocaine, 1 to 2 per cent.; or sterile gelatine solution, 5 per cent.(?); or fresh blood serum from another animal, or even antidiphtheritic or antistreptococcic serum; or a normal saline extract of a highly cellular organ, such as the thymus, testis, or brain (kephalin, a brain phosphatid). The actual cautery may be tried.

The subcutaneous or intravenous (*q. v.*) injection of fresh rabbit, horse, or human serum (not beef serum, as it is toxic), is highly recommended. Intravenously the dose is 10 to 20 c.c. for adults, and half this for children; subcutaneously it is 20 to 30 c.c. for adults, and half this amount for children. The dose may be repeated, if necessary, on the same or the second day. Ortner mentions doses of 2 to 4 oz. Moss, quoted by Osler, says that "as much as 100 or even 200 c. c. in four or five days" may be given. Antidiphtheritic (horse) serum may be used. Blood transfusion (*q.v.*) may be practiced. Calcium lactate, ℥ss–i, may be given three times, if necessary, during the day.

In severe uterine hemorrhage, atmocausis (Gr. ἀτμός steam + καῦσις burning) may be employed for two or three minutes at a temperature of 115° C.

In hæmarthrosis employ absolute quiet, immobilization, and gentle compression with the limb elevated, followed, after a few days, by gentle massage, proximal to the joint, but not to the joint itself. If contracture occurs, bring about gradual extension by means of an adjustable splint, or a plaster splint frequently applied.

Hæmoptysis.—Gr. αἷμα blood + πτύειν to spit. Hæmoptysis denotes hemorrhage through the mouth from the respiratory tract below the epiglottis. The blood in hæmoptysis is bright red in color, frothy, alkaline, and usually associated with mucopus; whereas in hæmatemesis it is apt to be dark in color, acid, and clotted.

Etiology.—Pulmonary tuberculosis; bronchitis, especially influenzal; pneumonia in the initial congestive stage; bronchiectasis;

fibrinous bronchitis following the expectoration of the cast; pulmonary abscess; pulmonary gangrene; pulmonary infarction; pulmonary cirrhosis; emphysema; asthma; pleurisy; pulmonary syphilis; pulmonary neoplasm; pulmonary distomiasis; pulmonary actinomycosis; pulmonary leprosy; passive pulmonary congestion due to heart disease; trauma to the chest; heavy lifting, violent exercise; aortic aneurysm; ulceration of the larynx, trachea, or bronchi; chronic arthritis (arthritic diathesis); severe anæmia, leukæmia, purpura scurvy, hæmophilia; vicarious menstruation; mediastinal dermoid cyst; severe acute infections; infectious jaundice or Weil's disease; nervous influences: injury of the central nervous system, epilepsy, hysteria insanity, adolescence, pregnancy (due to "cardiac nerve storms" in neurotic women, and controlled by rest, bromides and chloral—Hirst); inhalation of irritating fumes.

Treatment.—"The indications," says Osler, "are to reduce the frequency of the heart-beats and to lower the blood-pressure." To this end employ rest and quiet in bed, on the affected side, or in a sitting or semi-recumbent posture, in a well-ventilated, cool room. Place an ice-bag to the precordium, suspended from a bed-cradle, and give ice to swallow. Enjoin the patient not to speak, but to write down requests. Exclude visitors. To allay restlessness and cough, give a hypodermic of morphine, gr. $\frac{1}{8}$, but do not give morphine unless actually required. Administer a purgative.

The diet should be restricted, liquid (to obviate chewing), and bland: iced milk, ice cream, albumen water, gelatine preparations, raw eggs; no alcohol, tea, coffee, chocolate, spices, hot foods, or carbonated beverages. In tuberculosis, however, a solid but restricted diet should be resumed as soon as feasible.

For tumultuous heart action, prescribe nitroglycerin, or sodium nitrite, or amyl nitrite, or aconite (see Part 11) until the heart is quieted and the blood-pressure lowered, as shown by a blood-pressure instrument (*q.v.*). Ligatures may be applied to the lower extremities. Do not obliterate the pulse, and do not leave them on too long. Loosen the ligatures gradually. Apply dry cups (q. v.) for pulmonary congestion.

To limit the mobility of the chest, one may, if deemed advisable, apply a broad adhesive band around it, just below the nipples.

Artificial pneumothrorax (*q.v.*) is of value in persistent hemorrhage.

The following hæmostatics are of service:

Fl. ext. hydrastic, ♏xv–xlv, in milk, every hour for four or five doses.

Hydrastinin, gr. ss–ii, hypodermically, t.i.d. (the most reliable hæmostatic, says Croftan).

Cotarnine or Stypticin, gr. i–v by mouth, or gr. $\frac{1}{3}$ to $\frac{1}{2}$ hypodermically, 4 to 5 times daily.

Fl. ext. hamamelidis, 30 to 60 drops, five times a day. (Ortner.)

Aromatic sulphuric acid, 20 drops in water, every three or four hours.

Ol. terebinthinæ rectificati, 5 drops in milk or on bread or in capsule, every two to three hours (every half hour for six doses, says Yeo.)

Fl. ext. ergot, ℥ss–i–iv, in water.

Gelatine, ℥ii–iv of the dry gelatine made into a 10 per cent. flavored jelly, 3 to 4 times daily; or 10 per cent. sterile (Merck), ℥x hypodermically, repeated at least once a day.

Salt, one tablespoonful in a little water.

Calcium lactate, ℥ss–i, t.i.d., for a day or two.

Atropine, gr. $\frac{1}{50}$, hypodermically, in severe cases.

Pituitary extract, gr. ii–iv, t.i.d. (the best, says Wiggers).

Emetine hydrochloride, 0.5 gm. in distilled water, ℥i; ♏iv ($\frac{1}{30}$ gm.) hypodermically (Raeburn). It may be repeated in about twelve hours.

For other remedies, see Hemorrhage.

The bleeding usually ceases spontaneously, except in rupture of an aneurysm or erosion of a blood-vessel. In heart disease, the hemorrhage acts beneficially by relieving the arterial tension.

The patient should remain in bed until every trace of blood has disappeared from the sputum; perhaps a week or ten days longer.

Hæmothorax.—Gr. *αἷμα* blood + *θώραξ* chest. Presence of blood in the pleural cavity.

Etiology.—Pleuritis, especially tuberculous; hydrothorax; cancer; traumatism; erosion of an intrathoracic vessel, usually non-tuberculous; rupture of an aneurysm.

If the hemorrhage is large, there soon appear dyspnœa, rapid pulse, and pallor; and if the lung is injured, hæmoptysis. Fever follows in a day or so before sepsis occurs. The physical signs of pleural fluid are present. The diagnosis is made by aspiration. Possible sequelæ are empyema, pneumo-thorax, pulmonary abscess, pulmonary gangrene, pneumonia.

Treatment.—Enjoin absolute rest in bed, including feeding with a spoon and the use of the bed-pan. Give morphine, or codeine, to prevent cough (see Part 11). Immobilize the chest by the application, during

expiration, from below upward, of several well-warmed overlapping strips of zinc-oxide adhesive plaster, about three inches wide, and extending from the spine to well over the sternum. Apply an ice-bag. (See Hæmoptysis, for hæmostatic drugs.)

If there is urgent dyspnœa, perform paracentesis (*q. v.*, under Pleurisy), followed by the injection of 25 to 30 drops of adrenalin solution, 1 : 1000.

In traumatic cases with continuous hemorrhage, resect one or more ribs, and secure the bleeding vessel by means of catgut, cauterization, or gauze packing (see also Hemorrhage). In suturing wounds of the lung, use round needles and catgut, or perform large mass ligation. Treat shock (*q.v.*)

Hand Infections.—Varieties.—Lymphangitis (*q.v.*); tenosynovitis (see Orthopædics, Part 10); fascial-space abscesses (considered here); felon (*q.v.*); carbuncle (see Skin Diseases, Part 5); paronychia (Skin Diseases); subepithelial abscesses (considered here); erysipelas (see Skin Diseases); erysipeloid (see Skin Diseases); gas-bacillus infection (see Inflammation); anthrax (see Skin Diseases); sporotrichosis (see Skin Diseases); tuberculosis (see Skin Diseases); syphilis (*q.v.*); oidiomycosis or blastomycosis (see Skin Diseases); chronic staphylococcus dermatitis.

Localized subcutaneous abscesses require simple incision and drainage with gauze. In the superficial subepithelial infections, remove with sharp scissors all of the raised epithelium, and soak the part in an antiseptic solution or apply a dry antiseptic powder.

Fascial Space Abscesses.—I. *Middle Palmar Space.*—This space lies beneath the palmar aponeurosis and tendons, and extends from the middle metacarpal bone to the radial side of the metacarpal bone of the little finger. Infection here is shown by the presence of localized tenderness, bulging of the palm, and flexion of all the fingers. Pus is located at the site of greatest tenderness. Its presence is indicated by a brawny induration, not by a soft œdema which pits on pressure.

For the proper incision in middle palmar abscess, see Fig. 40.

II. *Thenar Space.*—This space extends from the middle metacarpal bone to the radial side of the hand. Its involvement is shown by a great balloon-like swelling over the ball of the thumb, and flexion of the distal phalanx of the thumb, but no obliteration of the concavity of the palm.

The proper incision in thenar abscess is a dorsal one on the radial side of the index metacarpale, opposite its middle, on a level with its flexor surface.

III. *Hypothenar Space.*—Abscess occurring here is subcutaneous. It requires merely simple incision and drainage with gauze.

IV. *Web or Lumbrical Spaces* between the bases of the fingers at the distal edge of the palm. A dumb-bell-shaped accumulation of pus may occur here beneath both the epidermis and derma (collar-button or shirt-stud abscess or frog felon). In making an incision between the fingers, see that both pockets of pus are opened, using a probe, if necessary, to find the second pocket.

V. *Dorsal Subcutaneous Space.*—Abscess here calls for simple incision and drainage.

Fig. 40.—Line of incision in middle palmar abscess (Kanavel)

VI. *Dorsal Subaponeurotic Space.*—In abscess here, make the incision over an interosseous space in order to avoid the tendons.

If a palmar abscess should extend into the forearm, it is always found beneath the flexor profundus and upon the pronator quadratus and interosseous septum, and following the ulnar artery. Such an extension, however, usually has its origin in a radial or ulnar bursitis (see Tenosynovitis, Part 10, for its proper treatment).

Should a fascial space become infected secondarily to a tendon-sheath infection, the two conditions must be treated individually, since an incision in one will not drain the other.

General Considerations.—Open the bowels prescribe local and systemic rest, a light, nutritious diet, and plenty of water. Before operating, soak the part in a hot antiseptic solution frequently, for about an hour at a time, until the infection is walled off. After the operation, drain the abscess cavity with gauze saturated with vaseline, or with gutta percha, for a day or longer. The soaking may be continued after the pus has been evacuated. After the inflammation has subsided (about three days),

begin passive and active movements. (All after Allen B. Kanavel.)

Hanot's Cirrhosis.—See Cirrhosis, Biliary, of the Liver.

Harelip and Cleft Palate.—The best time to operate for harelip is between the end of the first and fourth months; for cleft palate, during the second year.

If nursing is impossible, feed the infant with a spoon or medicine dropper, or by gavage, or by means of a flap of thin sheet rubber attached to the rubber nipple of the nursing bottle in such a way as to close the cleft. (Holt.)

In performing gavage, the infant should be recumbent, with the arms held to the sides by means of a towel or sheet about the body. The stomach-tube consists of a No. 12 to 16 (American scale) or 24 (French) rubber catheter, connected by a piece of glass tubing to rubber tubing and a funnel. Depress the base of the tongue with the left forefinger, and pass at least ten inches of the catheter rapidly into the œsophagus and stomach. Then raise the funnel high, to allow the escape of gas, before pouring in the food. In removing the catheter, first pinch the tubing to prevent a return of the fluid.

Harvest Bug.—See Part 5, Skin Diseases.

Hay Fever.—A recurrent spring or autumnal catarrh of the nasal, conjunctival, and pharyngeal mucosæ, manifested by congestion, tickling, itching, burning, sneezing, cough, increased secretion, etc., sometimes leading to asthmatic symptoms, and lasting from four to six weeks, due to a special individual susceptibility (sensitization or anaphylactization— *q.v.*) to the pollen protein of certain plants, *e.g.*, the maples, oaks, the willow, birch, poplar, the grasses, (rye, wheat, timothy, foxtail, red-top, blue-grass, beech grass, etc.), the ragweeds, rose, field daisy, golden-rod, aster or starwort, colt's-foot, privet, swamp pink, lily of the valley, sweet pea, hyacinth, lilac, hairy Solomon's seal, rape, green cabbage, thistle, spinach, yellow dock, amaranth, goose-foot, sage wormwood, chrysanthemum, marigold, xanthium, blue bottle, Œnothera biennis, Baccharis halimifolia, Parthenium hysterophorus, Ambrosia trifida.

Treatment.—The best treatment is removal to an immune locality: Adirondacks, White Mountains, Michigan, the ocean, or for those with autumnal catarrh, Europe.

All local abnormalities should be remedied, *e.g.*, septal deviations, spurs, adhesions, polypi, sinusitis, turgescent or hypertrophic rhinitis and nasopharyngitis, adenoids, and sensitive areas. Sensitive spots should be cauterized with chromic acid fused on the end of a probe (first warm the probe, dip it in the chromic acid crystals, then warm the part of the probe next beyond the crystals until the latter melt), or with trichloracetic acid on the end of the probe, or " with a flat electrode at white heat without the use of a local anæsthetic." First turn on the current until the electrode is brought almost instantly to a white heat. Introduce it cold, find a sensitive area with it (the sensitive areas are reddened and slightly elevated, and are usually found " just above the tuberculum septi on each side, and on the anterior part of each inferior turbinal "), and turn on the current. As soon as a white heat is observed, turn off the current and remove the electrode. " From four to five sensitive areas may be cauterized at a sitting," and the treatment may be repeated in five to seven days. (Ballenger.)

The following palliative measures are of variable benefit:

(a) Inhalations of steam medicated with compound tincture of benzoin, menthol, camphor, or chloroform; or dry inhalations of menthol, eucalyptus, or sanitas oil. (Thomson).

(b) Insufflation of powdered quinine sulphate; or a spray of quinine, gr. i ad ℥i; or ointment, gr. xxx, ad vaseline ℥i.

(c) A spray of the following:

℞ Mentholis,
Camphoræ, aa..... gr. iv
Petrolati liquidi..... ℥i

(d) Adrenalin hydrochloride, 1 : 20,000 to 10,000 to 1000, freshly made from tablets, used every one or two hours as a nasal spray; or adrenalin, 1 : 10,000, in lanolin and vaseline, dispensed in collapsible tubes: a piece about the size of a pea is inserted into each nostril every two hours, by means of a brush or the little finger, the head being thrown back until the ointment melts and flows over the mucous membrane. St. Clair Thomson, however, condemns the use of adrenalin and also cocaine. He says: " The temporary ischemia is followed by increased irritation, discharge, and obstruction."

(e) Irrigation of the nose (see Part 8) with normal saline solution (℥i ad Oi).

(f) Irrigation of the conjunctival sacs with normal saline or boric acid solution (℥i ad Oi); and protection of the eyes by goggles.

(g) Application over the closed eyes, at a distance of 12 to 18 inches, of the 500 candle-power incandescent lamp, for ten to twenty-five minutes, once to four times daily. (Ballenger.)

(h) To check secretion:

℞ Quininæ bromidi..... gr. ii
Atropinæ..... gr. ⅟₂₀₀
Codeinæ..... gr. ⅛
Misce et fiat pilula una. Mitte talis 6.
Sig.—One pill t.i.d. (Do not continue long.) (Kyle.)

℞ Extracti belladonnæ..... gr. ⅟₂₀ to ⅟₁₂
Arsenii iodidi..... gr. ⅟₁₆
Quininæ sulphatis..... gr. i
Misce et fiat pilula una. Mitte talis 9.
Sig.—One pill t.i.d. (Thomson.)

(i) Active purgation; abundance of water; free action of the skin.

(j) Bromides, phenacetin, antipyrine, pyramidon, etc., for relief of malaise (see Drugs).

(k) To limit the production of uric acid, freshly prepared concentrated nitromuriatic acid, 5 to 10 drops, diluted with one-half a tumblerful of water, after meals, and "sometimes also at night. The results of the remedy are apparent within 48 hours." (Gleason.)

It may be possible to desensitize the patient against the particular pollen protein to which he is susceptible by the injection of gradually increasing doses of the protein extract. To ascertain the type of plant toward whose pollen the patient is sensitive, make a number of scratches on the skin of the upper arm and gently rub in a drop of the pollen extract to be tested (after first shaking the extract to distribute the albuminous precipitate). In positive cases an urticarial or wheal-like reaction appears in from five to fifteen minutes. In making the tests, says Goodale, one grass pollen will suffice for all grasses, one rose pollen for the rose family, and ragweed pollen for all of the compositæ.

I. C. Walker gives the following directions for making solutions of proteins: To 0.5 gram of dry pollen add 44 c.c. of sterile normal saline solution (0.85 per cent.), and shake frequently during 24 hours. Then add 6 c.c. of absolute alcohol and shake again during 24 hours. Then centrifugalize at high speed, pipet off the supernatant fluid, add a small crystal of thymol, and keep in a cool place. It will keep for many months. From this stock solution, which is a 1 : 100 solution of protein in 12 per cent. alcoholic-normal saline solution, may be prepared the dilutions employed in treatment, *e.g.*, 1 : 500; 1 : 1000; 1 : 5000; 1 : 10,000.

The first treatment is an injection, subcutaneously, of 0.1 to 0.2 c.c. of the strongest dilution that just failed of producing the slightest skin reaction, usually a 1 : 10,000 dilution. Injections are given weekly. Walker recommends the following series for a patient who gives a positive skin test with a 1 : 5000 dilution, viz.—0.2 c.c. of 1 : 10,000; 0.2 c.c., 0.3 c.c., 0.3 c.c. of 1 : 5000; 0.2 c.c., 0.3 c.c. of 1 : 1000; 0.2 c.c., 0.3 c.c., 0.4 c.c. of 1 : 500; 0.1 c.c., 0.2 c.c., 0.3 c.c. of 1 : 100; twelve weeks' treatment in all.

There are three definite pollen seasons, says Walker, the first, April and May (willow, birch, maple, pine); the second, June and July (rose, June grass, orchard grass, red top, timothy, etc.); the third, August and September (ragweed, goldenrod, daisy). Preventive treatment against spring asthma (timothy, red top) should stop about the end of May; against summer asthma (ragweed), the middle of August.

These immunizing injections should be repeated each season, and are said to be increasingly efficacious. Goodale reports 123 cases treated for two or more years with "very definite improvement" in 59 cases.

In between attacks the patient should aim to increase his nervous and physical stamina by the observance of correct hygiene: regular hours of eating and sleeping, fresh air day and night, bland, non-poisonous, nutritious diet (no alcohol nor too much nitrogenous food), abundant water drinking, a daily warm bath followed by a cool spinal douche and friction, adequate rest and exercise, regulation of the bowels (sodium phosphate, when required), tonics if indicated, *e.g*, arsenic, strychnine, phosphorus, iron (see Part 11), and the correction of eyestrain.

All nasal and pharyngeal abnormalities should be corrected, *e.g.*, septal deviations, spurs, adhesions, polypi, sinusitis, turgescent or hypertrophic rhinitis and naso-pharyngitis, adenoids, and sensitive areas (see Parts 8 and 9 on Nose and Throat Diseases).

Calcium chloride, taken indefinitely, may act as an efficient prophylactic, as claimed by Emmerich and Loew in five cases reported (dosage recommended: teaspoonful of a 20 per cent. solution of the crystals in distilled water, in a quarter of a glass of water, t.i.d., during meals). Use white petrolatum liberally in the nostrils and eyes.

Headache.—**Causes.**—Fatigue; hunger; overeating; unhappiness; constant weeping; menstruation; bad air; psychoneuroses: neurasthenia, psychasthenia, hysteria; eyestrain; spotted veils; gastro-intestinal intoxication: dyspepsia, hyperacidity, constipation, etc.; insufficient aëration due to tuberculosis, pleurisy with effusion, emphysema, asthma, etc.; heavy hats or heavy masses of hair; toxæmia of pregnancy; acute yellow atrophy of the liver; diabetes; gout; plumbism; malaria; infectious diseases, particularly the onset; Addison's disease; anæmia; leukæmia;

polycythæmia; low blood-pressure (*q.v.*); high blood-pressure (*q.v.*); arteriosclerosis; nephritis; alcohol, tobacco, tea, coffee, ether, chloroform, opium, etc.; eye diseases, viz., conjunctivitis, keratitis, iritis, glaucoma; dental caries; nasal obstruction, due to turgescence of the erectile tissue over the middle turbinate and a deviated septum, causing pressure on the sphenopalatine ganglion, hypertrophies, adhesions, polypi, adenoids, etc.; sinusitis; otitis media; nasopharyngeal disease; aortic incompetency; cardiac hypertrophy; venous hyperæmia due to chronic cardiac insufficiency, emphysema, coughing, obstruction to the venous return in the neck; general paresis; trigeminal neuralgia; supra-orbital neuralgia; migraine (hemicrania, sick headache, or periodic headache); vasomotor paralysis and dilatation, characterized by a very flushed face; meningitis; acquired chronic hydrocephalus; brain tumor; brain abscess; acromegaly; trauma to the head; concussion of the brain; epilepsy (following a seizure); syphilis; insolation; heredity; female pelvic disease; indurative myalgia, characterized by the presence of painful indurations near the insertions of the muscles at the occiput, and cured by massaging away these indurations.

Treatment.—First ascertain and correct the cause, if possible. Good hygiene is important in all cases: regular hours of eating and sleeping, fresh air day and night, adequate rest and exercise, a daily warm bath followed by a cool douche; a bland, non-poisonous diet, in some cases a nutritious diet, in others, especially migraine (*q.v.*) a restricted diet, with much water drinking and plenty of exercise; and finally, tonics, *e.g.*, glycerophosphates (*q.v.* in Part 11), or strychnine, gr. $\frac{1}{30}$ t.i.d., gradually increased to gr. $\frac{1}{10}$ t.i.d.; or tincture of nux vomica, 10 drops in water, t.i.d.p.c., gradually increased to 20 to 25 drops t.i.d.

For high blood-pressure (*q.v.*), prescribe ammonium bromide, gr. x–xx well diluted, every hour until relieved; or sodium nitrite, gr. ss, t.i.d.; or nitroglycerine, gr. $\frac{1}{100}$, every few hours, as required.

For low-blood pressure, prescribe ergotin, gr. $\frac{1}{4}$, t.i.d., increased, if necessary, to gr. i, t.i.d.

For cardiac headaches, employ digitalis, which may be taken in appropriate doses for months or years; or caffeine citrate, gr. ii, in a teaspoonful of aromatic elixir, every fifteen to thirty minutes, until relief is afforded. (Kolipinski.)

Analgesic Remedies.—Phenacetin, gr. v–x, with or without salol, gr. x, repeated, if necessary. Phenacetin, caffeine, and aspirin, aa gr. v. Aspirin, gr. viii–x, every two to three hours.

℞ Phenacetini, vel antipyrinæ, vel acetanelidi ..... gr. iii–v
Caffeinæ ..... gr. i
Sodii bicarbonatis,
Acidi tartarici, aa ..... gr. xv
M. et. ft. chart. i.

Sig.—One powder in half a glass of water, repeated if necessary (be very cautions, however, if using acetanelid).

Ammonium bromide, gr. x–xx, well diluted, every hour until relieved.

℞ Spiritus ammonii aromatici ..... ℥iv (♏xx per dose)
Ammonii bromidi .... ℥ii (gr. xv per dose)
Elixiris simplicis, q.s. ad ..... ℥iii
M. Sig.—Two teaspoonfuls in water every two hours. (Fussell.)

Sodium bromide, gr. xx–xl, with chloral hydrate, gr. x–xx, well diluted, repeated after one or two hours, if necessary. Aromatic spirits of ammonia, ℥ss, in a cupful of hot water or hot lemonade, repeated if necessary, every three hours for three or four times. Hoffman's anodyne, one teaspoonful, well diluted. Fluid extract of cannabis indica, gtt. i, every half to one hour, until relieved (2 to 10 to even 60 drops may be required; see Part 11). Morphine, gr. $\frac{1}{4}$.

℞ Aquæ ammoniæ ..... ℥ii
Sodii chloridi ..... ℥ii
Spiritus camphoræ ..... ℥iii
Aquæ, q.s., ad ..... O ii
M. Sig.—For local application to the forehead. (Respail's Eau Sedative.)

Hot or cold applications, electricity, or massage may be of service. The hot foot-bath lasting ten minutes, or the cold foot-bath lasting half a minute to three or four minutes, may be tried. Counter-irritation over the upper cervical spine in the form of mustard poultices (*q.v.*), the Paquelin cautery, chloroform liniment (*q.v.*), tincture of iodine, or hot followed by cold douching, is also recommended.

Headache, Periodic.—See Migraine.

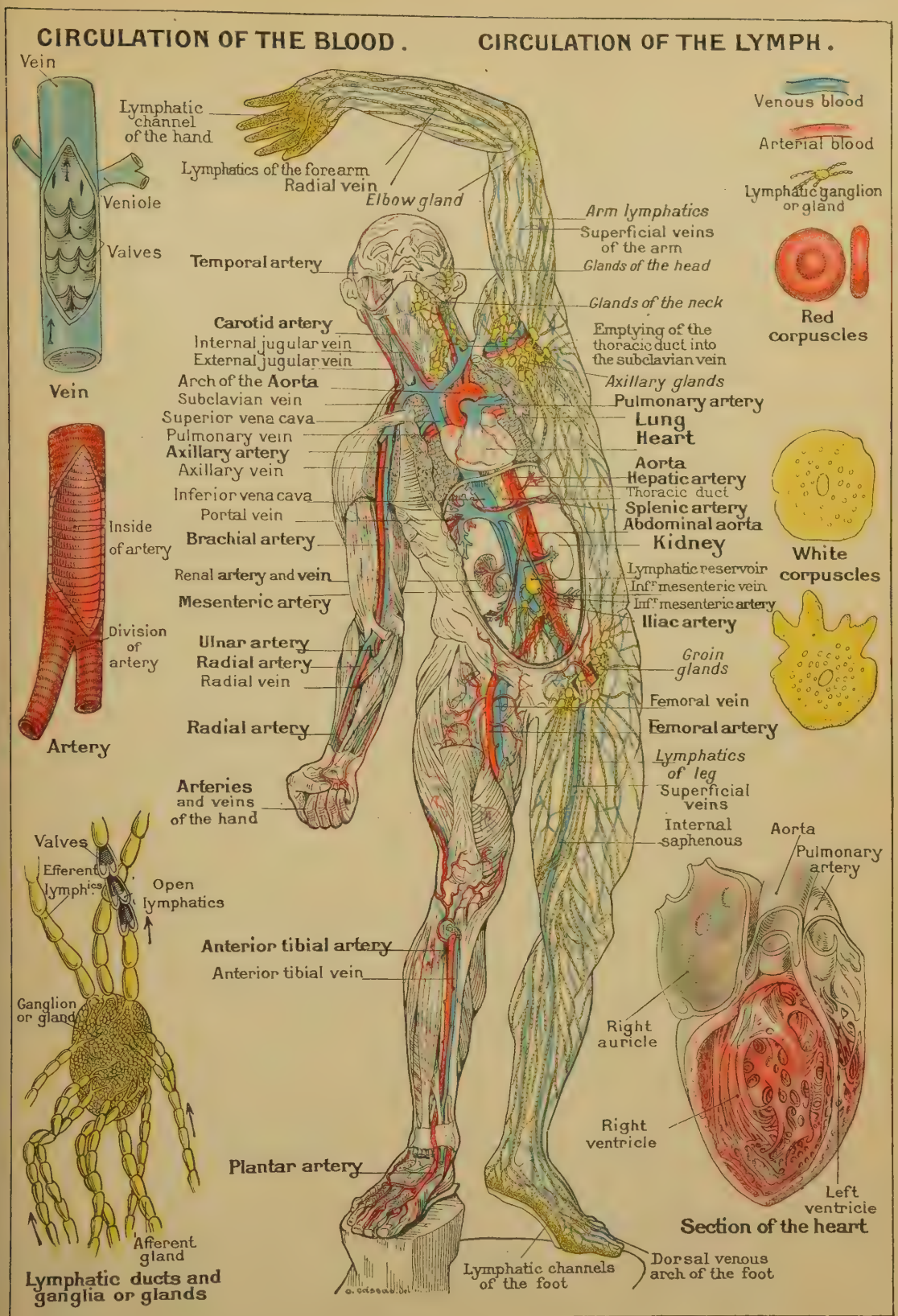
Head Enlargement.—**Causes.**—Hydrocephalus; rickets; osteitis deformans; bone tumors (myeloma, hypernephroma, syphilis, etc.); acromegaly.

Heart Asthenia.—See Heart-Strain and Neurasthenia.

Heart-Block.—(See under Arrhythmia.)

Heartburn; Cardialgia.—Gr. καρδία heart ἄλγος pain. A burning sensation in the cardia and œsophagus due to acid irritation. (See Hyperacidity.)

Heart Dilatation.—See Cardiac Insufficiency or Failure.



LAROUSSE MÉDICAL

Heart and circulation (arteries, veins, lymphatics.)

Heart Disease, Acute Valvular.—See Endocarditis, Acute.

Chronic Valvular.—See Stage of Compensation, under Cardiac Insufficiency.

Compensated Valvular.—See Stage of Compensation, under Cardiac Insufficiency.

Congenital.—See Congenital Heart Disease.

Failure.—See Cardiac Insufficiency or Failure.

Irritable.—See Arrhythmia, Palpitation, Heart-Strain, and Neurasthenia.

Rapid.—See Tachycardia.

Slow.—See Bradycardia.

Soldier's.—See Heart-Strain, and Neurasthenia.

Heart-Strain.—Heart-strain is the result of overwork or stress brought to the breaking point, with a subsequent diminished capacity of the strained organ for exertion, and a diminished adaptability to changes of blood-pressure (loss of tone).

The symptoms are: unduly rapid action of the heart, perhaps extra systoles and palpitation, perhaps breathlessness and cyanosis, perhaps nausea, perhaps thoracic distress, coming on after comparatively slight exertion; inability on the part of the heart to adapt itself promptly either to sudden exertion or to sudden cessation from exertion (in the latter instance the heart may suddenly almost stop beating, due to the sudden release of tension which was keeping it steady).

Treatment.—Confine the patient to bed for a number of days on light diet, and keep the bowels free. Later, allow him gradually to sit up, first propping him up with pillows; then allow him out of bed, keeping close watch upon the heart for increased rate or irregularity. After several days of rest out of bed, graduated exercises may be undertaken, always strictly avoiding fatigue or distress. The general hygienic rules given under Compensated Heart Disease, (under Cardiac Insufficiency), should be observed for an indefinite period.

Heat Cramps.—See Sunstroke.

Exhaustion.—See Sunstroke.

Helminthiasis.—Gr. ἕλμινς worm. See Worms.

Hematuria.—See under Genito-Urinary Diseases.

Hemeralopia.—See Part 6.

Hemianæsthesia.—See Brain Localization.

Hemianopia.—See Part 6, Eye Diseases.

Hemiatrophy, Facial.—See Facial Hemiatrophy.

Hemicrania.—Gr. ἡμι- half + κρανία skull. See Migraine.

Hemiopia.—See Part 6, Eye Diseases.

Hemiplegia.—See Brain Localization.

Hemorrhage.—Gr. αἷμα blood + ῥηγνύναι to burst forth. External hemorrhage is self-evident. Increased pulse rate and faintness or syncope are the most important signs of internal hemorrhage. Excessive bleeding is followed by collapse.

Treatment.—Arrest surgical hemorrhage by ligature; irrigation with hot liquid at a temperature of 110° to 115° F.; pressure with gauze, either dry, or soaked with adrenalin solution, 1 : 1000; or cocaine, 1 to 2 per cent.; or sterile gelatine solution, 5 per cent.; or fresh blood serum from another animal, or even diphtheritic or antistreptococcic serum; or a normal saline extract of a highly cellular organ, such as the thymus, testis, or brain (cephalin, a brain phosphatid); or a 5 to 10 per cent. solution of coagulene (see Part 11); or pressure with living muscle; or the actual cautery.

Internal Hæmostatic Remedies.—1. Fresh rabbit, horse, or human serum (not beef serum, as it is toxic). Intravenously the dose is 10 to 20 c.c. for adults, half this amount for children; subcutaneously it is 20 to 30 c.c. for adults, and half this for children. The dose may be repeated if necessary on the second day (Weil). Ortner mentions doses of 2 to 4 oz. Moss, quoted by Osler, says that " as much as 100 or even 200 c.c. in four or five " days may be given.

2. Blood transfusion (*q.v*).

3. Coagulene, 5 to 10 per cent. solution in normal saline solution (0. 6 per cent.), internally or intravenously (*q.v*).

4. Gelatine (Merck's sterilized), 1 to 2 per cent. in normal saline solution 100 to 200 c.c. intravenously, at 37° C., daily, until effectual (probably of no value).

5. Other hæmostatics enumerated under Hæmoptysis.

If much blood has been lost, lower the head, apply heat to the extremities, precordium, and head, and administer hot normal saline solution (0.6 to 0.7 per cent., gr. xlvi to the pint, temperature 102° F.) per rectum, subcutaneously, or intravenously, according to the urgency of the case; or, much to be preferred, gum-salt or gum-bicarbonate solution (Part 11.) Give, according to Crile, not more than a pint at a time (to avoid pulmonary œdema), and repeat every hour until the pulse and blood-pressure are restored. Give the infusion very slowly. Should the pulse become markedly slow and soft, stop the infusion,

prop the patient up, resort to artificial respiration, and massage the heart by "rapid rhythmic compression over the precordium and epigastrium." (Matas.) Blood transfusion (*q.v.*) is best of all.

In order to confine the blood to the vital centres, elevate the foot of the bed, and bandage the extremities and abdomen evenly and tightly over thick layers of non-absorbent cotton, for one or two hours; or use Crile's rubber pneumatic suit.

The following heart stimulants may be employed, if required, after the hemorrhage has been arrested: strychnine, gr. $\frac{1}{60}$ to $\frac{1}{20}$; digitalin (Merck's German), gr. $\frac{1}{10}$ to $\frac{1}{2}$; atropine, gr. $\frac{1}{200}$ to $\frac{1}{100}$; camphor, gr.i–ii, in sterile oil, ♏x–xv, frequently repeated; ether, ♏x–xx–lx; adrenalin, 1:1000, ♏v–xx, very slowly in normal saline infusion, not suddenly at one shot; caffeine benzoate or citrate, gr. i; morphine, gr. $\frac{1}{8}$ to $\frac{1}{4}$ (in psychic shock); oxygen inhalation (see under Pneumonia). The above stimulants may be used alternately. Water should be given by mouth or rectum. Matas injects slowly into the rectum, black coffee, 8 oz., panopepton, 1 oz., brandy or whiskey, 1 oz., tincture of digitalis, 15 minims, and laudanum, 10 minims, which may be repeated after two hours if necessary.

After the patient is out of danger, prescribe, for the restoration of the blood, rest, fresh air, a liberal diet, and iron (see Anæmia).

Hemorrhage, Cerebral.—See Apoplexy; Concussion, Contusion, and Compression of the Brain; and Hemorrhage, Meningeal, in the New Born.

Hemorrhage, Cutaneous.—See Purpura.

Hemorrhage, Gastric.—See Hæmatemesis.

Hemorrhage, Intestinal.—The presence of red blood in the stools indicates bleeding from the lower bowel. In bleeding from the upper bowel the stools are usually dark or tarry (melæna, from Gr. μελαίνα black bile), and very offensive. The blood may be "occult," as in gastric or duodenal ulcer, or in cancer, and revealed only by microscopic or chemical examination (see Gastric and Duodenal Ulcer).

Etiology.—a. Local Disease.—Anal fissure; hemorrhoids; enteritis (*q.v.*, for its many causes); intestinal neoplasms, rarely multiple polyposis; parasites: amœba, ankylostoma, fluke-worm, etc. (see Worms); embolism or thrombosis of the mesenteric vessels; intussusception; strangulation of the bowel; hernia; rupture into the bile passages of an aneurysm of the hepatic artery; rupture of an aneurysm of the intestinal vessels; amyloid degeneration of the intestinal vessels; gastric and duodenal ulcer; gastric cancer.

b. Constitutional Disease.—Severe anæmia; purpura; scurvy; leukæmia; hæmophilia; splenic anæmia; severe nose-bleed; severe infections: yellow fever, smallpox, malaria, septico-pyæmia, melæna neonatorum (probably infectious in origin; the bleeding may occur anywhere in the body, not alone in the intestines); heart disease; chronic interstitial nephritis; hepatic cirrhosis; vicarious menstruation.

Treatment.—Attend to the cause. In obscure cases make an anal, rectal, and sigmoidoscopic examination (see Enteritis, for technique). Appropriate measures in appropriate cases are the application of an ice-bag or Leiter's coil to the abdomen, elevation of the foot of the bed, the hypodermic administration of morphine to allay restlessness and quiet peristalsis, and perhaps the administration of astringents, *e.g.*, bismuth, tannic acid preparations, silver nitrate, lead acetate, etc. (See Part 11). For a list of hæmostatic drugs, etc., see under Hemorrhage.

In melæna neonatorum, one may try calcium lactate, gr. ii, every five hours, or, according to Holt, as much as 20 to 30 grs. a day; or suprarenal extract, gr.ii, +, by mouth, every two hours. Attempt to check accessible bleeding points by means of compresses soaked with adrenalin, 1 : 1000. In intractable cases resort to blood transfusion (*q.v.*).

Hemorrhage, Intracranial, in the New-Born.—The chief symptoms of cerebral hemorrhage are stupor, bulging fontanelle (not invariable), slow pulse, paralysis with rigidity and increased reflexes, muscular twitching and convulsions.

Hemorrhage above the tentorium is indicated by cortical symptoms, chiefly involving the facial, oculo-motor, and accessorius nerve tracts, and the extremities. The infant is restless, and the greater fontanelle bulges. Hemorrhage below the tentorium is indicated by spinal nerve symptoms, *e.g.*, rigid extremities, erection of the penis, wrinkling of the scrotal skin. The infant is quiet and somnolent, the fontanelles do not bulge, and lumbar puncture (*q.v.*) usually shows blood.

Treatment.—If it is possible to locate the hemorrhage from the paralysis or convulsions, an operation should be performed as soon as possible. The risk is not small, but is justifiable in view of the hopeless idiocy which may otherwise ensue. (For the treatment of the paralysis, see Part 10, Orthopædics). Marked symptoms of intracranial pressure call for decompression.

The latter is performed over the parietal region if the hemorrhage is supratentorial; over the occipital region if the hemorrhage is infratentorial.

Hemorrhage, Meningeal.—See Apoplexy; Concussion, etc., of the Brain; Hematorrachis; and Hemorrhage, Intracranial, in the New Born.

Nasal.—See Epistaxis, in Nose Diseases, Part 8.

Œsophageal.—See Hæmatemesis.

Pulmonary.—See Hæmoptysis.

Spinal.—See Hæmatomyelia and Hæmatorrhachis.

Hemorrhagic Diathesis.—Gr. *διαθέναι* to dispose. See Hæmophilia.

Diseases of the Newly Born.—See under Hemorrhage, Intestinal.

Pancreatitis, Acute.—See Pancreatitis, Acute Hemorrhagic.

Polymyositis.—See Myositis.

Hemorrhoids.—Gr. *αἱμορῥοίς*; from *αἷμα* blood + *ῥοία* flow. **Etiology.**—Constipation; diarrhœa; tenesmus due to fissure in ano, proctitis, or sigmoiditis; overuse of cathartics; long straining at stool; overeating; sedentary habits; excessive smoking and drinking; cardiac insufficiency; hepatic cirrhosis; abdominal or pelvic tumors; pregnancy; uterine displacements; heredity; hyperchlorhydria (E. Palier).

Treatment.—Attend to any possible causal influence. Prescribe moderate exercise, a bland diet, alkalies for hyperacidity (Palier); a mild laxative as required (cascara, rhubarb, licorice powder, magnesia, or a morning saline, see Part 11), strychnine as a tonic, local cleanliness with castile soap and water, and perhaps a cool cleansing enema after each bowel movement. The following astringent ointment may be applied by means of a pile pipe, night and morning, and after each bowel movement, the parts being first cleansed with castile soap and water:

℞ Acidi tannici ..... gr. x
Pulveris camphoræ ..... gr. v
Ichthyoli ..... ʒiss
Unguenti zinci oxidi, q.s., ad ..... ℥i
(Kerley.)

For painful, œdematous, irreducible piles, cleanse the parts with castile soap and water, rinse, and bathe with boric acid solution, ʒi–iv ad Oi. and apply either (1) hot fomentations or hot poultices (or a hot sitz bath for about half an hour), or (2) compresses wet with lead and opium lotion (*q.v.*), or aluminum acetate, one tablespoonful to a cup of water, and covered with an ice-bag. A suppository containing opium, aq. ext., gr. i, may be inserted, if necessary. Other soothing applications are the following:

℞ Unguenti gallæ et opii ..... ℥i
Sig.—Apply several times daily, as required.

℞ Unguenti gallæ,
Unguenti stramonii, aa ..... ℥ss
Sig.—Apply several times daily, as required.

℞ Pulveris opii ..... gr. x
Extracti hyoscyami ..... gr. xii
Extracti hamamelidis ..... ʒii
Petrolati mollis, q.s., ad ..... ℥i
M. Sig.—Apply every 3 to 4 hours about one-twelfth of the above. (Earle.)

℞ Chrysarobini ..... gr. xii
Iodoformi ..... gr. ivss
Extracti belladonnæ foliorum .... gr. viiss
Petrolati mollis ..... ʒiv
M. Sig.—Apply several times daily. (Cohnheim.)

℞ Chrysarobini ..... gr. iss
Acidi tannici ..... gr. iss
Iodoformi ..... gr. iii
Extracti belladonnæ foliorum .... gr. ⅓
Olei theobromatis ..... gr. xxx
M. ft. suppos. i, No. 12.
Sig.—Use two or three daily. (Cohnheim.)

A hard, painful, thrombotic hemorrhoid should be incised, under cocaine, or novocaine anæsthesia, (see Part 11), and the clot turned out.

Chronic hemorrhoids are curable by surgery, the best methods being (1) ligation and excision; and (2) the clamp and cautery method. The bowels should first be thoroughly moved, and the rectum cleansed by an enema and soap and water just before the operation.

The first method is as follows: If general anæsthesia is employed, the sphincter is divulsed, using first one finger, then two fingers, then both thumbs, and gently stretching the sphincter until the thumbs press upon the tubera ischii on each side; or Kelly's conical dilator may be used. Under local anæsthesia the procedure is as follows: Insert a fenestrated speculum, and bring down each pile by tilting the speculum, assisted by the patient straining. Inject the pile with sterile water or eucain, ⅛ per cent., until it turns white. Then sever it at the muco-cutaneous junction (Hilton's white line) with scissors, the artery being above. Ligate the pedicle with fine linen, and excise the pile, leaving a long pedicle. The cut edges need not be sutured. After the operation is completed, apply a thick wedge-shaped gauze pressure pad over the anus and a snug T-binder to prevent bleeding. (Gant.)

In the clamp and cautery method, the clamp is applied after the pile has been severed at the muco-cutaneous junction; the pile is then removed with scissors and the stump thoroughly burned with a Paquelin cautery at a dull red heat. After being cauterized it should not be handled, for fear of causing hemorrhage. After all the piles have been removed, the stumps are smeared with sterile carbolized vaseline, and the same dressing applied as in the ligature operation. (Gant.) Before attacking the piles, see that the anus is very thoroughly dilated. Draw each pile down and outside the anus.

Some insert, after either operation, a suppository of opium (aq. ext. gr. i, with iodoform, gr. iii), and a small gauze-wound tube, to be left in for thirty-six hours. The bowels should not be moved until after the fourth or fifth day, when castor oil may be given.

Bokenham recommends ionization. A zinc needle attached to the positive pole of a galvanic battery (the negative electrode may be placed on the back) is plunged into the pile, which may first be injected with adrenalin and novocain (see Part 11), and a current of 10 to 25 milliampères is gradually turned on and allowed to act for ten minutes or longer, or until coagulation is produced. If the pile is as large as a pigeon's egg, treat it in two or three instalments at intervals of ten days.

Henoch's Purpura.—See Purpura.

Hepatic Abscess.—Gr. ἡπαρ liver. See Liver Abscess.

Cancer.—See Cancer of the Liver.

Cirrhosis.—See Cirrhosis of the Liver, Biliary, and Portal.

Congestion.—See Liver, Active Congestion of the.

Distomiasis.—See Distomiasis.

Enlargement.—See Liver Enlargement.

Hepatoptosis.—Gr. ἡπαρ liver + πτῶσις, falling. See Enteroptosis.

Hereditary Ataxia.—See Ataxia, Friedreich's Hereditary.

Spastic Paraplegia.—See Spastic Paraplegia.

Œdema of the Legs, or Milroy's Disease.—See Œdema.

Heredo-Ataxia.—See Ataxia, Friedreich's Hereditary.

Hernia.—L. *hernia.* The protrusion of the contents of a cavity through an abnormal opening. Here are considered, however, only abdominal herniæ.

Etiology.—a. Exciting Causes.—Local trauma, a fall, lifting, straining, coughing, sneezing, etc.

b. Predisposing Causes.—Heredity, a congenital sac, defective muscular and tendinous development, loss of weight and muscle atrophy due to constitutional diseases, obesity, pregnancy.

A hernia is liable to serious complications, *e.g.*, irreducibility, obstruction, inflammation, and strangulation.

An irreducible hernia is apt to give rise to indigestion, flatulency, colicky pains, irregular action of the bowels, and perhaps attacks of local peritonitis, and it is in constant danger of strangulation.

An obstructed hernia is manifested by local discomfort, tenderness, increase in size, indigestion, nausea, incomplete constipation, and perhaps acute colicky pains. The impulse on coughing is usually retained. Strangulation may follow obstruction.

An inflammed hernia is characterized by local tenderness and increase in size, and fever. The impulse is retained.

Strangulation is manifested by the sudden occurrence of sharp, colicky pain, accompanied by more or less shock, and soon followed by nausea and vomiting and complete constipation. The hernia is irreducible, tender, shows an increase in size and tenseness, and is dull on percussion.

I. Treatment of Complications.—a. Irreducible Hernia.—If the condition is recent, an attempt may be made to reduce the hernia by rest in bed with the hips elevated and thighs and legs flexed, a pressure pad applied by means of adhesive straps, an ice-bag over this, reduced diet, and careful taxis, practiced every two or three days. The knee-chest posture may be tried. But it is better to operate, if no contra-indications exist (see below).

b. Obstructed Hernia.—Flex the thighs and legs, apply heat, elevate the foot of the bed, and give, every two or three hours, high enemata of oil followed by warm water. When these are successful, calomel in small doses may be given, followed by a saline. (Part 11).

If the above measures are unsuccessful, operate.

c. Inflamed Hernia.—Apply ice or heat locally, always the latter in elderly persons, and give high enemata as in obstruction.

d. Strangulated Hernia.—Taxis may be tried for about five minutes, with the hips elevated and thighs and legs flexed, but there is danger of contusion or rupture of the bowel or sac, or of reduction of the still strangulated hernia. If reduction is successful, fasten a pad over the hernial opening,

and keep the patient in bed until all symptoms have disappeared.

If taxis fails, or is deemed inadvisable, operate at once. If the incarcerated gut is gangrenous, it should be resected. If in doubt as to the presence of gangrene, apply towels wet in hot normal saline solution for ten or fifteen minutes. If then the purplish color has turned to bright red and the peritoneum is still glossy, resection is not required.

II. Treatment of Uncomplicated Hernia.—Since about 95 per cent. of herniæ are cured by operation, and in view of the dangers to which one with hernia is exposed, operation is the treatment of choice, except in children under three or four years of age, in whom the defect is often curable by a truss, and in the following cases: senility, grave constitutional disease, and very large irreducible hernia, especially in the obese.

In these exceptional cases a truss or belt should be employed, the latter for umbilical hernia. Coley recommends, for hospital patients, the Knight (cross-body) truss, for both inguinal and femoral herniæ; and, for private patients, the Hood or frame truss. (Pomeroy).

The truss should be applied with the patient prone and the hernia completely reduced, and the pad should rest over the internal ring; a perineal strap may be required for large scrotal herniæ.

For inoperable, irreducible inguinal herniæ, employ a canvas or other unyielding scrotal bag supported from the pelvis and shoulders.

For inoperable umbilical herniæ employ a linen duck or canvas belt with elastic straps, or a woven silk elastic belt with non-elastic straps, to which may be fastened a circular pad of hard rubber or wood covered with chamois skin, convex in reducible and concave in irreducible herniæ, and double the size of the hernial ring, or at least two inches larger than the latter in diameter. In large herniæ the belt may be supported from the shoulders if necessary. (Coley.)

The French spring-truss is recommended during pregnancy for inguinal and femoral herniæ.

Infantile umbilical hernia usually disappears spontaneously; but one may employ a wooden pad, 1½ inches in diameter, fastened on with adhesive plaster, which should encircle the entire abdomen. Or, draw together over the navel two parallel linear folds of the skin so that they meet in the median line, and hold in place with a strip of zinc oxide adhesive plaster, 1 to 2 inches wide and 4 to 6 inches long. Change every fifth day. If the plaster causes excoriation, fold the skin horizontally for a time. A cure may be effected by this means in from three to six months (Author?).

Ventral hernia in children is usually cured in several months by placing zinc oxide adhesive plaster "flat on the skin over the hernia." (Kerley).

In children, if no cure is accomplished with the truss in two years, operate.

Herpes.—Gr. ἕρπης. See Part 5, Skin Diseases.

Buccal.—See Stomatitis.

Zoster.—See Part 5, Skin Diseases.

Herpetic Stomatitis.—See Stomatitis.

Hiccough.—Hiccough, hiccup, or singultus (L.) is an intermittent sudden chronic contraction or spasm of the diaphragm followed immediately by sudden closure of the glottis as the air is rapidly inspired. It is a phrenic nerve reflex.

Etiology.—Various inflammatory and irritative conditions of the abdominal viscera; certain constitutional diseases, *e.g.*, gout, diabetes, and chronic nephritis; nervous diseases, *e.g.*, hysteria, epilepsy, brain tumor, cerebral hemorrhage, shock.

Remedial Measures.—1. Drinking of ice-cold water; or a teaspoonful of salt and lemon juice; or salt and vinegar; or whiskey; or turpentine; or musk; or cocaine, gr. $\frac{1}{50}$ to $\frac{1}{20}$ (see Part 11 for all drugs.)

2. Inhalation of amyl nitrite or chloroform.

3. Strong traction upon the tongue.

4. Ether spray or mustard leaves on the epigastrium.

5. Galvanism, or mustard leaves, or massage, or pressure over the phrenic nerve between the sternomastoid and scalenus anticus muscles and above the omohyoid.

6. Gastric lavage (see under Dyspepsia for technique.)

7. Rhubarb and soda (*q.v.*) and an enema.

8. Sneezing.

9. Hypodermic injection of nitroglycerin, or pilocarpine, or apomorphine, or best, morphine, gr. $\frac{1}{6}$, with atropine, gr. $\frac{1}{120}$.

10. Bilateral compression of the eyeballs.

Hill Diarrhœa.—A tropical affection occurring chiefly in Europeans who ascend to an elevation of about six thousand feet or more, especially during the rainy season, and characterized by an acute morning diarrhœa accompanied by flatulence, the stools being large, usually liquid, pale and frothy. Early recovery is the rule.

Treatment.—A deficiency in the digestive ferments is presumably at fault, therefore pepsin or pancreatin is prescribed, gr. x–xv,

about two hours after eating. Bichloride of mercury, gr. $\frac{1}{60}$ to $\frac{1}{20}$, well diluted, before meals, is said to be "an important aid in the treatment." (Author?) A strict milk diet, perhaps preferably boiled, is advisable. A flannel band should be worn about the abdomen.

Hirschsprung's Disease.—See Colon, Dilatation of the.

Hodgkin's Disease; Pseudo-Leukæmia.—Gr. ψευδής false. An uncommon, fatal disease, caused probably by the so-called bacillus Hodgkini, characterized by progressive painless enlargement of the lymphatic glands, usually enlargement of the spleen, sometimes of the liver, usually fever, and a progressive anæmia of secondary type. The red cells and hæmoglobin are diminished to about the same extent; nucleated reds and degenerated reds are uncommon except in the late stages; the leucocytes are only slightly increased, averaging about 12,000, with a relative increase of lymphocytes (see Blood Examination.)

Pressure symptoms, depending upon the parts compressed, eventually occur. Pressure upon the trachea produces cough and dyspnœa; upon the veins, cyanosis and œdema; upon the recurrent laryngeal nerve, alteration of the voice; upon the œsophagus, dysphagia; within the mediastinum, dyspnœa, cough, cyanosis, dysphagia; upon the bile ducts, jaundice; within the abdomen, pain, ascites, pain and œdema in the lower extremities, etc.

Osler describes six clinical types of the disease, (1) acute; (2) localized; (3) with relapsing pyrexia; (4) latent; (5) splenomegalic; and (6) lymphadenia ossium; the last of doubtful identity.

From lymphosarcoma, lymphatic leukæmia, gummatous lymphoma, tuberculous lymphadenitis, and simple acute inflammatory lymphadenitis, the affection is distinguished by the characteristic histological appearance of an excised gland, which shows a uniform proliferation of the endothelial and reticular cells, mononuclear and multinuclear giant cells, eosinophiles, and fibrosis due to proliferation and thickening of the fibrous stroma. (Dorothy Reed). The tuberculin (see Tuberculosis, Pulmonary) and Wassermann tests may be of assistance.

Prognosis.—The disease is usually fatal within three years.

Treatment.—When the case is seen early, with only a few accessible glands involved, these should be thoroughly removed, and an exhaustive search made for a possible atrium of infection in the nose, mouth, or throat. Later operation is futile.

X-ray therapy (*q.v.*), if resorted to early, is of great benefit, and even possibly curative. Large areas of the body surface as well as the enlarged glands should be treated. Knox recommends a dose once a week, over several large areas at a time, using, in most cases, a .5 to 1 mm. filter and changing the areas treated as frequently as possible. Later, a dose should be given every two weeks for several months. In very acute cases, a daily dose may be given to different areas.

Fowler's solution (Part 11) in increasing doses causes the glands to dwindle, but they enlarge again when the arsenic is withdrawn. Some report cures with arsenic. Phosphorus is also recommended: ℞ Zinci phosphidi, gr. $\frac{1}{20}$ to $\frac{1}{12}$ in pill form, t.i.d.

Radium (*q.v.*) is effectual against both Hodgkin's disease and lymphosarcoma, says C. F. Burnam, who does not consider surgical removal of the glands necessary.

Hookworm Disease.—**See Ankylostomiasis.**

Hour-Glass Contraction of the Stomach.—See Gastric and Duodenal Ulcer.

Huntingdon's Chorea.—See Chorea, Huntingdon's.

Hydatid Disease.—See Echinococcus.

Hydrencephalocele.—Gr. ὕδωρ water + ἐγκέφαλος brain + κοῖλος hollow. See Meningocele.

Hydrocephalus.—Gr. ὕδωρ water + κεφαλή. head. Hydrocephalus is acute or chronic, congenital or acquired, internal or external (rarely the latter). Internal hydrocephalus is a distension of the ventricles of the brain with fluid. The rare and relatively unimportant external hydrocephalus is a collection of fluid external to the brain cortex, occurring as a result of atrophy of the brain due to old age, sclerosis, softening, hemorrhage, rickets, and the cachexias of cancer, alcoholism, nephritis, etc.; or sometimes occurring in the form of a meningeal cyst.

Congenital internal hydrocephalus is manifested by an enormous enlargement and thinning of the cranium, the presence of large open areas uncovered by bone, downward inclination of the eyes, and usually imbecility. It is usually fatal within four or five years. The cause is unknown.

Acquired internal hydrocephalus is either acute or chronic. The symptoms are those of brain compression, *i.e.*, headache, slow pulse, drowsiness, stupor or coma (which may clear up and recur), choked discs, and perhaps retraction of the neck and muscular rigidity, suggesting meningitis. The head need not be enlarged. It may be idiopathic (serous meningitis or ependymitis of Quincke), or secondary to tumor, abscess, cysts, parasites, syphilis, tubercle, sinus

thrombosis, meningitis, rickets, nephritis, heart disease, profound anæmia, etc. It is difficult of diagnosis. Two types are recognized, (1) obstructive, due to closure of the foramina of Lushka and Majendie, through which the ventricles communicate with the subarachnoid space; and (2) non-obstructive or communicating, due to closure of the subarachnoid space by adhesions. Cerebrospinal fluid is secreted by the chorioid plexus, and is absorbed almost entirely in the subarachnoid space. The two types are differentiated by introducing 1 c.c. of a specially prepared neutral solution of phenolsulphonephthalein into either lateral ventricle and performing lumbar puncture one-half hour later. Colorless spinal fluid indicates the obstructive variety of hydrocephalus. (Dandy.)

Treatment.—In congenital hydrocephalus one may occasionally withdraw the accumulation of fluid by lumbar or ventricular puncture, in the hope that the process may come to a standstill. The ventricular puncture may be made anywhere on the cranium (but see Cushing in Keen's Surgery for his method of treatment by permanent subperitoneal drainage).

Acquired hydrocephalus should be treated according to the cause. A decompression operation with puncture of the ventricle has resulted in cure. An artificial opening may be made between the ventricle and the subarachnoid space. When a tumor is causative, it should be removed, if possible, or a decompression done. In inflammatory cases (see Meningitis) repeated puncture of the ventricles may protect the patient from the effects of compression until a spontaneous cure of the inflammation occurs.

Hydronephrosis.—See Part 3, Male Genito-Urinary Diseases.

Hydropericardium.—Gr. *ὕδωρ* water + *περί* around + *καρδία* heart. A serous, non-inflammatory transudation into the pericardial cavity, usually occurring unnoticed as a terminal event.

Etiology.—Passive congestion due to cardiac or pulmonary disease, or to obstruction of the pericardial or cardiac veins by cancer, tubercle, aneurysm, thrombosis, or cardiac, pericardial, or mediastinal adhesions; sclerosis of the coronary arteries; nephritis; cachexia (due to nephritis, tuberculosis, carcinoma, malaria, leukæmia, etc.).

The Treatment is that of pericarditis with effusion (*q.v.*).

Hydrophobia; Rabies.—Gr. *ὕδωρ* water + *φόβος* fear; L. *ra'bere*, to rage. An acute infectious disease, transmitted to man by the bite of infected (rabid) animals, particularly the dog, and probably caused by Negri's protozoön, which is found in the nerve cells of the central nervous system. The virus slowly accumulates in the central nervous system, where, after an incubation period of from five days to six months (average about forty days) from the time of the bite, it gives rise to the following symptoms: at first, irritation at the seat of the bite, depression, anxiety, headache, irritability, restlessness, hypersensitiveness to external stimuli, slight difficulty in swallowing liquids, and huskiness of the voice, these symptoms continuing from one or two days to a week, when they become more severe; attempts to swallow water, and even other slight external stimuli, precipitate distressful spasm of the muscles of deglutition and respiration, so that the sufferer dreads the sight or thought of water; these spasms soon become general and associated with excitement or delirium, and after from one and a half to three days, paralysis sets in, followed by death in six to eighteen hours. The symptoms are rarely paralytic from the start (dumb rabies).

Wounds about the face are more rapidly and severely fatal than wounds lower down.

The offending dog may be kept under observation for fourteen days, and if it is then well, it was not rabid. Or, the dog may be killed, and a small portion of its medulla oblongata inoculated beneath the dura of several rabbits. If the rabbits become paralyzed in from fifteen to twenty days, the condition is rabies. The demonstration of the presence of the Negri bodies, however, is diagnostic, for they have never been found except in rabies. Obtain sections of the gray matter from the cerebral cortex in the region of the fissure of Rolando, from Ammon's horn, and from the cerebellum (the Negri bodies are best found in these locations), at right angles to the surface. Place the sections upon slides, cover with coverglasses, and gently press while moving the coverglass over the slide, in order to spread out the section moderately thin. Dry in the air. Fix in pure methyl alcohol for five minutes, and pour on the following stain: distilled water, 10 c.c., made alkaline by the addition of one drop of one per cent. potassium carbonate solution, to which is added ten drops of Giemsa's stain. Allow to stand for three hours; pour off the stain; wash in running tap-water for one to three minutes; and dry with filter paper. If the smear is thick, dip it in 50 per cent. methyl alcohol before washing in water. The Negri bodies appear as round, oval, triangular, pear-shaped, spindle or sausage-shaped bodies, usually within the nerve-cells or their branches varying in size from 0.5μ to 20μ

in diameter, with a hyaline cytoplasm, and chromatoid granules surrounding the nucleus. The cytoplasm is stained blue, the central bodies and chromatoid granules a blue red or azure; while the cytoplasm of the nerve-cells is blue, their nuclei red, nucleoli dull blue, and the red blood-cells a pink yellow (method of Williams and Lowden, described by Webster). Van Giesen's method is as follows: After fixing the smears in methyl alcohol, pour upon them the following stain, which should be freshly prepared: distilled water, 10 c.c. to which is added 3 drops of a saturated alcoholic solution of rose-aniline violet and six drops of Loeffler's methylene blue solution; warm until steam rises; pour off the stain; rinse in water; allow to dry. The cytoplasm of the Negri bodies is stained deep red, the granules and central body dark blue, the nerve cells light blue, and the blood-cells a pale salmon red.

While waiting for a diagnosis, however, the patient should undergo the Pasteur treatment. This treatment extends over a period of twenty-one or fourteen or eight days, according to the potency of the virus or toxin used; and it aims to actively immunize the patient before the termination of the incubation period. After the symptoms of the disease have once appeared, it is invariably fatal.

Pasteur's vaccine is prepared from the dried brains and spinal cords of infected rabbits. First a cord which has dried for fourteen days is used, the virus of such a cord being quite attenuated; the next day a cord dried thirteen days, and so on, up to, usually a cord dried three days. The brains and cord are ground to a paste, frozen, pulverized, and rapidly dried in vaccuo. See also Part 11.

There is an hysterical pseudo-hydrophobia.

Treatment.—Excise the wound, if feasible, even though it has healed; or place a ligature above the wound, open the latter thoroughly, apply hot water and suction cups, and then cauterize it with carbolic acid or nitric acid, followed by a saturated solution of sodium bicarbonate, alcohol, and a dry dressing; or employ the actual cautery. Then send the patient to a Pasteur institute at once, or procure the virus at once and treat the patient yourself (see Part 11).

On the first appearance of symptoms, place the patient in a darkened, warm, quiet room, on concentrated liquid nourishment. Apply cocaine (*q.v.* in Part 11) to the fauces, if necessary, to facilitate swallowing; nutrient enemata (see Rectal Feeding) may be required. Administer morphine, or hyoscine hypodermically, chloral and bromide per rectum (see Convulsions), and chloroform per inhalation as soon as required. Curare, which paralyzes the motor nerve endings, is claimed to have cured cases. If it paralyzes the respiratory nerves, artificial respiration (see Asphyxia) must be resorted to. Tizzoni's serum, obtained by immunizing sheep with attenuated virus, may be tried with some hope of success; dosage 10 c.c., 5 c.c., and 5 c.c. on three successive days.

The muzzling of dogs is an effectual prophylactic measure.

Hydropneumothorax.—Gr. ὕδωρ water + πνεῦμα air + θώραξ chest. See Pneumothorax.

Hydrothorax.—Gr. ὕδωρ water + θώραξ chest. A non-inflammatory pleural transudation. (See Pleurisy for diagnostic information.)

Etiology.—Heart disease (transudation usually right-sided); kidney disease (transudation usually bilateral); neoplasms of the pleura, lungs, or diaphragm; compression or thrombosis of the azygos veins.

Treatment.—Attend to the cause. Rest, cardiac stimulation, diuresis, saline cathartics, and counter-irritation usually suffice to dispel the fluid. In the presence of dyspnœa and cardiac embarassment, however, paracentesis had better be performed (see Pleurisy with Effusion).

Hymenolepis Nana or Dwarf Tapeworm.—See Tapeworm Infection.

Hyperacidity; Hyperchlorhydria.—Gr. ὑπέρ over; L. *acidus*, sour; χλωρός green (chlorin) + ὕδωρ water. Excessive acidity of the stomach contents, *i.e.*, more than 0.2 per cent. or 60° of free hydrochloric acid (see under Dyspepsia for Gastric Analysis).

Symptomatology.—Sense of weight, pressure, and burning in the epigastrium and perhaps burning sensation in the cardia and œsophagus, and acid eructations (cardialgia or heartburn), occurring usually at the height of digestion, or one-half to three or four hours after eating, and relieved by albuminous food, alkalies, or vomiting. Oversensitiveness of the nerves to acid may cause symptoms with even normal hydrochloric acid secretion, and on the other hand, hyperchlorhydria may be present without symptoms.

Etiology.—Practically any or all of the functional or organic agencies enumerated under Dyspepsia. The commonest causes are dietetic indiscretions and chronic gastritis (early stage).

Treatment.—Attend first of all, of course, to the cause; hyperchlorhydria itself is merely a symptom (consult Dyspepsia, or Gastric Indigestion).

Enjoin adequate rest, exercise, and recreation; fresh air day and night; regular hours of eating and sleeping, slow and thorough mastication, rest before and after meals, and good hygiene generally, not neglecting oral cleanliness.

The diet should be bland, and soft, or finely divided. Some clinicians advocate an albuminous diet, some a carbohydrate diet and some a mixed diet. The carbohydrate advocates declare that, while protein food neutralizes hydrochloric acid by combining with it, nevertheless proteins cause increased secretion of hydrochloric acid, and therefore tend to perpetuate the hyperchlorhydria.

Osler recommends a strictly meat diet for from four to six weeks, followed by a gradual return to regular diet. He prescribes 3¼ ounces of finely minced raw or rare meat, two medium slices of stale bread, and an ounce of butter, with a glass of Vichy, Seltzer, Apollinaris, or spring water (not too cold), three times a day.

R. C. Cabot prescribes "six small meals daily, containing an abundance of carbohydrates and fats, and little proteid food except a moderate amount of milk." A. E. Stansfeld and Rehfuss also favor the carbohydrate diet.

Sippy recommends a liberal mixed diet: lean meat, steamed white fish (sole, hake, plaice, etc.), oysters, toast, zwieback, butter, equal parts of milk and cream, and sodium bicarbonate and light or calcined magnesia (MgO), aa gr. xxx, in half a glass of water, at the height of digestion, *i.e.*, two and one-half to three hours after meals (pulv. rhei, gr. v–x, may be added for constipation); this diet to be continued t.i.d. for four or five days; then well-cooked cereals (rice, farina, or oatmeal, with sugar and cream) added, if desired, for two more days; then, for two or three weeks longer, a soft egg added in place of a portion of the lean meat, and mashed potatoes and vegetable purées added; then regular diet resumed.

℞ Sodii bicarbonatis ℥iv (gr. xxx per dose)
Magnesii oxidi... ℥iv (gr. xxx per dose)
Pulveris rhei.... gr. xl–lxxx (gr. v–x per dose)
Aquæ, q.s., ad... ℥viii

M. Sig.—Shake well, and take two tablespoonfuls in half a glass of water as directed. (Sippy.)

The rhubarb is added only for constipation. The magnesia should be intermitted if it causes diarrhœa. For constipation, which may arise after the disuse of the magnesia, Sippy recommends rye and graham breads, apple sauce, stewed fruits, marmalades, potatoes, spinach, carrots, parsnips, and squash. Sodium phosphate, one teaspoonful in aqueous solution, one hour before breakfast, is a useful aperient.

The bromides (gr. x, three or four times a day) are of temporary value in hypersensitive reflex states; codeine, gr. ⅓ per day, may be added. Atropine is indicated in the same conditions: atropine sulphate, gr. $\frac{1}{250}$ t.i.d.a.c., increased to gr. $\frac{1}{100}$, or until mild atropine symptoms occur (see Part 11), may, if watched, be continued, with interruptions, for weeks or months (Neuhoff).

℞ Extracti belladonnæ.... gr. ⅛–⅙–¼–½
Magnesii oxidi..... gr. viiss
Fiat pulvis una; mitte talis 12.

Sig.—One powder t.i.d.p.c. (Ortner). (Watch for toxic symptoms.)

℞ Bismuthi subcarbonatis,
Sodii bicarbonatis,
Magnesii oxidi, aa..... gr. x
Tincturæ belladonnæ.... ♏v
Aquæ, q.s., ad..... ℥i

M. Sig.—One ounce t.i.d.p.c. (The doses may be varied. Magnesium is added in sufficient amount to obviate constipation.)

Belladonna is indicated in hyperactive reflex gastric states (hyperacidity, hypersecretion, pylorospasm), together with neutral fats (olive or sweet almond oil, shaken with water to remove fatty acids; cream and fresh butter), for the purpose of inhibiting secretion and motility. Alkalies (soda, magnesia, bismuth carbonate) are indicated to neutralize excess of acid. An oil, such as a wineglass of cream, may be given a half-hour before each meal, with marked relief of symptoms.

The following articles of diet should be interdicted: stomachics, bitters, spices, condiments, acids, salads, pickles, meat extracts, meat soups, broths, peptone preparations, stewed meats, liver, kidney, sweetbread, game, rumpsteak, smoked meat, sausage, all foods rich in purins (see Gout), sour milk, fried foods, raw fruits and vegetables, mushrooms, onions, radishes, coarse foods, such as cabbage, turnips, brown bread, rye bread, etc., pastry, fried bread, hot buttered toast, sweets, nuts, sharp cheese, excess of salt, tea, coffee, malt liquors, alcohol, tobacco.

Hyperæsthesia Gastrica.—Gr. *ὑπέρ* over + *αἴσθησις* sensibility; *γαστήρ* stomach. The occurrence of gastric distress which appears soon after eating and continues until the stomach is empty.

Etiology.—Neuroses (neurasthenia, hysteria, etc.); anæmia; tobacco; morphine; cocaine; gastric ulcer; chronic gastritis; dietetic faults: heavy food, high seasoning, very hot or cold fluids, tea, coffee, alcohol, over-

eating, hasty eating and imperfect mastication, irregular eating, fasting, exclusive diet.

Treatment.—Attend to the cause. In non-organic cases, the same treatment as for hyperacidity (*q.v.*) is employed. Alkalies in large doses are given for the relief of pain; also silver nitrate, gr. ⅛ to ¼ to ½, in half a glass of water on an empty stomach; or orthoform or anæsthesin in 7½ grain powders after dinner and supper; or menthol, gr. ¾ to 1½ in solution in olive oil. Cold epigastric compresses and galvanization (see Dyspepsia, Nervous), are useful. Rectal feeding (*q.v.*) for a few days is sometimes required. Prescribe iron (*q.v.*) for anæmia.

Hyperchlorhydria.—See Hyperacidity.

Hyperemesis.—Gr. *ὑπέρ* over + *ἔμεσις* vomiting. See Vomiting.

Hyperesthesia Gastrica.—See Hyperæsthesia Gastrica.

Hyperosmia.—See Part 8, Nose Diseases.

Hyperpituitarism.—L. *pitúita*, a glutinous phlegm. See Acromegaly.

Hypersecretion or Gastrosuccorrhœa.—Gr. *ὑπέρ* over + L. *secre'tio*, secretion; Gr. *γαστήρ* stomach + L. *suc'cus*, juice + Gr. *ῥοία* flow. A continuous or, rarely, intermittent or periodic supersecretion of gastric juice (which is usually hyperacid), associated with pain, acid eructations, and perhaps vomiting of a clear, watery, highly acid fluid, and leading to gastric dilatation due to pylorospasm. The gastric juice continues to be secreted for hours and sometimes even days after the stomach is free from food.

The diagnosis is based upon the presence of at least 20 to 30 c.c. of gastric juice in the fasting stomach, *i.e.*, in the morning after lavage the previous evening.

Etiology.—Neuroses (neurasthenia, tabes, general paresis, myelitis, and other central nervous disorders); morphinism; alcoholism; nicotinism; pyloric obstruction (see Dilatation of the Stomach, Chronic.)

Treatment.—This is the same as the treatment of hyperchlorhydria (*q.v.*), with perhaps the addition of lavage. Atropine is especially indicated.

Hypertension, Vascular.—See Blood-Pressure.

Hyperthyroidism.—See Exophthalmic Goitre.

Hypertrophic Arthritis.—Gr. *ὑπέρ* over + *τροφή* nutrition. See Arthritis Deformans, in Part 10, Orthopædics.

Hypertrophic Cervical Pachymeningitis.—See Meningitis, Chronic.

Cirrhosis of the Liver.—See Cirrhosis, Biliary, of the Liver.

Dilatation of the Colon.—See Colon, Dilatation of the.

Hypertrophic Osteopathies.—See Osteopathies, the Hypertrophic.

Progressive Neuritis of Childhood.—See Interstitial Hypertrophic Progressive Neuritis of Childhood.

Pulmonary Arthropathy.—See Osteo-Arthropathy.

Stenosis of the Pylorus.—See Dilatation of the Stomach, Chronic.

Hypertrophy of the Tongue.—See Macroglossia.

Hypoacidity.—Gr. *ὑπό* under. See Anacidity.

Hypochlorhydria; Subacidity.—Gr. *ὑπό* under + *χλωρός* green + *ὕδωρ* water; L. *sub*, under. See Anacidity.

Hypochondriac Pain.—See Pain.

Hypoglossal Nerve.—Gr. *ὑπό* under + *γλῶσσα* tongue. The twelfth cranial or hypoglossal nerve supplies the muscles of the tongue. It is involved in bulbar paralysis (*q.v.*), and sometimes in tabes, meningitis, plumbism, trauma, tumors, scars, bone disease.

Hypopituitarism.—See Acromegaly.

Hypotyalism.—See Aptyalism.

Hypostatic Congestion.—Gr. *ὑπό* under + *στάσις* halt. See Pulmonary Congestion.

Hypotension, Vascular.—See Blood-Pressure.

Hypothyroidism.—Gr. *ὑπό* under, + thyroid. The following conditions are due to or accompanied by insufficient thyroid secretion, viz., cretinism, myxœdema, and possible chlorosis, amenorrhœa, goitre, eczema, rickets, adenoids, enlarged glands, nocturnal enuresis, post influenzal and hysterical depression, adiposis dolorosa, lipomatosis, pregnancy, vomiting of pregnancy, eclampsia, epilepsy, melancholia, slow growth in children, lactation, the menopause, senility, and certain forms of obesity.

See Cretinism, and Myxœdema, for the mode of administering thyroid extract. It is contra-indicated in cardio-vascular disease.

Hysteria.—Gr. *ὑστέρα* womb. Hysteria is a fixed mental disposition or temperament of a peculiar nature, subject to the recurrent exhibition of acute psychical and nervous phenomena. The hysterical temperament is characterized by rapid changeableness and capriciousness of mood, impulsiveness or lack of self-control, susceptibility to suggestion, exaggerated perception of bodily sensations, exaggerated egoism, desire for attention and notice, "martyrdom," and a "tendency to confabulation." The acute psychical and nervous phenomena are very

variable. They include choking sensations with the feeling of a ball rising in the throat (globus hystericus), contortions and assumption of attitudes (clownism), cries, hiccough, coughing, stuttering, shaking, spasms and contractures (abdominal spasm giving rise to phantom tumors, which disappear under anæsthetization), polymorphous tremors, swallowing and belching of air, rapid breathing, dyspnœa, crying and laughing spells, mutism, dream states, lethargy states, trance states, myoclonus, tetany, pseudo-convulsions, pareses and paralyses (see under Brain Localization for differential diagnosis from organic paralysis), abasia, aphonia, loss of special sense perception (sight, hearing, taste, etc.), anæsthesias, pseudo-tabes, tender and painful areas (hysterogenic spots), cardialgia, pseudopathies of the various organs (stomach, intestines, heart, genitals, skin, joints, special sense organs, temperature, etc.), etc. There is scarcely a disease which may not be simulated by hysteria.

Osler defines hysteria as "a disorder, chiefly of young women, in which emotional states control the body, leading to perversion of mental, sensory, motor, and secretory functions."

Etiology.—The predisposing cause is a neuropathic heredity (hysteria, insanity, alcoholism, exhausting disease, consanguinity, etc., in the forebears). Exciting causes are mental strain, worry, or shock, traumatism, masturbation, exhausting illness, etc.

Treatment.—Enjoin a well-ordered hygienic mode of life: adequate mental and physical rest, daily exercise in the fresh air, agreeable occupation, fresh air day and night, a morning warm bath before breakfast in a warm room, followed by a cool douche and brisk rubbing with a coarse towel, regular hours of eating and sleeping, rest before and after eating, diet abundant, nutritious and bland, no alcohol, tea, coffee, or tobacco, regulation of the bowels, wholesome companionship with others. Prescribe such tonics as iron, arsenic, and strychnine (see Part 11), if deemed advisable. Strychnine in small, frequently repeated doses is recommended for vasomotor atonicity. I believe the hysteric is one who is habitually more or less under the domination of the subconscious or subjective (emotional, impulsive or instinctive) mind, the objective (rational, volitional, critical or controlling) mind being more or less in abeyance; in other words, one who is constantly hypersusceptible to auto-suggestion or self-hypnosis. I believe, therefore, that the causal treatment should be directed toward the strengthening of the objective mental faculties by some form of objective study or occupation, a turning about of the mind's eye from within to the outer world, a strengthening of the will to be sane by means of sympathetic wholesome advice and precept. Tell the patient, with kindness and sympathy, that her symptoms have no organic basis, but are purely nervous or functional and remediable, and will vanish just as soon as she will take it upon herself to realize that they are but delusions.

The Weir Mitchell regimen (see Neurasthenia) may, in a small minority of cases, be best; but there is danger that it may increase introspection.

For painful areas and other local manifestations are recommended, chiefly for purposes of suggestion, massage, electricity, the actual cautery, and hot or cold douches.

For paralyses, Sachs recommends the "slowly interrupted faradic current, not too strong"; whereas Starr recommends the application, daily, of strong faradic currents "which move the limbs." The patient should at the same time be encouraged to make voluntary efforts.

For spasm and contractures, says Starr, "massage and long continued hot baths, followed by cold effusions, are the best remedies." Reduction under ether may be necessary. James Collier recommends for the removal of paralyses, contractures, and aphonia, that the patient be lightly anæsthetized until the active, noisy, struggling stage is reached, when the ether should be immediately withdrawn, and as the patient approaches full consciousness, her attention be directed to the fact that her limbs are moving, or the contracture has disappeared, or that she is using her voice.

For hysterical aphonia (see Throat Diseases, Part 9, for diagnostic data), Kyle employs the falsetto voice method with eminent satisfaction. The patient is instructed to sound a high falsetto or head tone, "resounding in the vault of the naso-pharynx," with the mouth tightly closed. This is kept up for some time, while the pitch is gradually lowered and the volume increased. After a while, when the patient has gained confidence in the head-tone, tell her, "when making the head tone, to open the mouth." Repeat this several times, lowering the pitch each time. Then, while the patient is repeating the head-tones with the mouth open, have her, in the same tone, repeat a word after you, "and she will suddenly realize that she is talking." Kyle adds: "I have never known this method to fail in a true case of hysterical aphonia."

"The attention of the patient is directed to the nose rather than to the larynx, and she does not realize that the sound is really being produced in the latter organ." The patient should be assured in the beginning that her loss of voice is only temporary.

Faradism may be employed. Place one electrode over the episternal notch, and the other to the sides of the larynx alternately, starting off with a "fairly strong current." Or, apply one electrode to the interior of the larynx, and direct the patient to say "Ah," or "one, two, three," on the contact being suddenly made. Hypnotism is effectual.

For hypochondriasis and for active hysterical manifestations, the following sedative drugs are of service: tr. valerian, ammoniated tincture of valerian, zinc valerianate, menthol valerianate or validol, asafœtida, bromide, aspirin (for drugs see Part 11).

℞ Fluidextracti valerianæ,
Syrupi rhei aromatici, aa..... ℥i
M. Sig.—One teaspoonful every two hours. (Forchheimer.)

Asafœtida pills, says Forchheimer, are "valuable in the intestinal troubles of hysterics."

℞ Zinci valeratis..... gr. i–iiss
Phosphori..... gr. 1/60
Misce et fiat pilula una; mitte talis 30.
Sig.—One pill t.i.d.p.c. (Yeo.)

Depressant forms of hysteria may be accompanied by, or possibly due to hypothyroidism (*q.v.*)

In severe attacks one may dash cold water in the face, or apply the wire brush of a faradic machine to the region of the nose, or place ammonia or amyl nitrite to the nostrils, anything to produce a strong mental impression or counter-suggestion which will divert the patient's subconscious thought currents into new channels. To this end, the hypodermic administration of apomorphine, gr. 1/12, is very effectual.

Icterus.—L.; Gr. ἴκτερος jaundice. See Jaundice.

Icterus Gravis.—See Atrophy, Acute Yellow, of the Liver.

Neonatorum.—See under Jaundice.

Idiocy, Amaurotic Family.—See Amaurotic Family Idiocy.

Ileitis and Ileo-colitis.—See Enteritis.

Ileus.—L.; Gr. εἰλεός from εἰλεῖν to twist. See Intestinal Obstruction.

Iliac Pain.—See Pain.

Illuminating Gas Poisoning.—See Asphyxia and Poisoning.

Impaction, Fecal.—See Intestinal Obstruction.

Impotence.—See Part 3, Genito-Urinary Diseases.

Inanition, Simple Acute.—L. *inanis*, empty. Simple acute inanition is acute starvation, and is due to anorexia or refusal of food, vomiting, insufficient milk secretion (the baby stops nursing and cries after five or ten minutes and the breast is found to be empty), improper food (too weak or too strong), feeble digestion, retracted nipples, fissured nipples, cleft palate, hare-lip, infantile feebleness in sucking.

The symptoms are failure to gain, usually constipation, sometimes diarrhœa, pallid, inelastic skin, sunken abdomen, usually more or less continuous crying. If neglected it goes on to malnutrition or marasmus.

To distinguish inanition from acute dyspepsia or diarrhœa due to overfeeding, weigh the baby for a twenty-four hour period before and after each nursing, and thus ascertain the daily total intake.

Treatment.—Attend to the cause. If the child is congenitally feeble or dyspeptic, secure a wet-nurse, if possible, and dilute the milk at first with an equal amount of plain boiled water or lime water, and give only a few teaspoonfuls every two hours. If vomiting or diarrhœa is present, one may remove the cream from the milk (Holt). Feeding may be accomplished with a spoon, medicine dropper, Breck feeder, or, if necessary, by gavage. In performing gavage, the infant should be recumbent, with the arms held to the sides by means of a towel or sheet about the body. The stomach tube consists of a No. 12 to 16 (American scale) or No. 24 (French scale) rubber catheter, connected by a piece of glass tubing to rubber tubing and a funnel. Depress the base of the tongue with the left forefinger, and pass at least ten inches of the catheter rapidly into the œsophagus and stomach. Then raise the funnel high, to allow the escape of gas, before pouring in the food. In removing the catheter, first pinch the tubing to prevent a return of the fluid.

As the child improves, gradually increase the strength and quantity of milk.

If a wet-nurse is not procurable, give modified cow's milk: P., 0.5 to 1 per cent.; F., 0.5 to 1 per cent.; C., 4 to 5 to 7 per cent.; to begin with, or low proteid and low fat, according to Holt; relatively high carbohydrate is needed (see Infant Feeding).

Sufficient water should be supplied. If necessary, give colonic injections of normal saline solution (℥i ad Oi), every five hours,

or continuously by Murphy's drop method. For subnormal temperature, employ the measures recommended for "Premature and Delicate Infants." For high fever employ tepid sponging or baths.

In inanition due to an insufficient supply of breast milk, nurse the baby more frequently or use both breasts at each nursing. If, after a few days, the weight curve does not rise, add a bottle after each nursing, but not until the breast has been completely emptied. The amount in the bottle depends upon the amount in the breast.

For anorexia, try a few drops of pepsin and dilute hydrochloric acid before each meal, or strychnine, gr. $\frac{1}{500}$–$\frac{1}{300}$, every six hours before a feeding, also a lukewarm bath followed by a cool (not too cool) spray, once or twice a day, shortly before mealtime, or daily gastric lavage. (Be sure that the child gets sufficient water). Feeding with a medicine dropper may be tried.

If all other measures fail, employ gavage.

In bottle fed babies with hunger inanition, add ½ to 1 ounce to each feeding.

Says Gerstley, in inanition, if the food is increased the child gains; in marasmus or decomposition, if the food is increased the child goes down.

For the treatment of inanition or failure to gain due to acute dyspepsia, see under Diarrhœa.

Inanition or Starvation Fever of Infants.—See Inanition, Simple Acute.

Incontinence of Urine.—See Parts 2 and 3, on Gynæcology and Genito-Urinary Diseases.

Incoördination, Muscular.—See Ataxia.

Indicanuria.—Indican + Gr. *οὖρον* urine. Indican or indoxyl sulphate of potassium in the urine arises chiefly from the intestinal decomposition of protein. It is increased in chronic intestinal catarrh, typhoid fever, intestinal tuberculosis, cholera, diminished peristalsis (as in ileus, peritonitis, and constipation), obstructive jaundice, gastric hypoacidity, meat diet (there is little or none on a vegetable or milk diet), and pus accumulation with insufficient drainage anywhere within the body (otitis media, empyema, putrid bronchitis, etc.).

Test for Indican.—To a few c.c. of urine add an equal volume of concentrated hydrochloric acid. To this mixture add only one or two drops of a 10 per cent. solution of ferric chloride, and invert the test-tube repeatedly. Now add a few c.c. of chloroform, and invert the tube as before. The chloroform will absorb indigo-blue (formed from indican) and consequently will be colored more or less of a blue shade, according to the amount of indican originally present. See also Intestinal Intoxication.

Indigestion, Gastric.—See Dyspepsia.

Intestinal.—See Diarrhœa.

Indurative Headache.—L. *indurātio*, hardness. See Headache.

Infant Feeding.—**I. Breast Feeding.**—

Nursing Schedule.

	Nursings in 24 hours	Intervals during the day: 6 a. m. to 9 p. m.	Nursings between 9 p. m. and 6 a. m., at 2 a. m.
First day	4	6 hours	1
Second day	6	4 hours	1
Third day to end of 4th or 5th month	7	3 hours	1
Fifth to 13th month	6	3 hours	0

During the first two days if the baby cries excessively, give a little warm boiled water or a very dilute solution of milk sugar or plain sugar. Dennett, however, condemns the addition of sugar. Czerny and Wachenheim begin twenty-four hours after birth with a four-hour interval schedule, commencing at 6 A. M., and ending at 10 P. M., five meals a day, usually no night feeding. In very undersized infants the two-hour schedule is to be used. In brief, the schedule is to be adapted to the child, and not the child to the schedule.

The infant is to be nursed until it is satisfied, or goes to sleep, or ceases to suck actively, but no longer than twenty minutes. Hold the child upright just before and after nursing or every few minutes interrupting nursing, and pat the back, so as to allow of the escape of swallowed air. Cleanse the mouth very gently before each nursing with a soft cloth, or, according to some, do not cleanse the mouth at all. The mother's nipple may be cleansed with plain boiled water or with boric acid solution after each nursing and covered with a sterile pad. If boric acid is used, the nipple should again be bathed with plain boiled water before the baby nurses. Alternate the breasts in nursing.

Keep the windows open at night, and take the baby out for an airing daily, in the warmest part of the day, except, of course, in very hot weather; but in winter not until after at least the first month. Record the baby's weight once or twice a week. The average weight at birth is 7⅓ pounds. The infant should regain its birth weight, following the first three or four days' loss, by the end of the tenth day. Thereafter it should gain about 6 to 8 ounces a week under six months of age, and

3 to 4 ounces a week thereafter. It should about double its birth weight in six months, and treble it in a year to fourteen months. At birth the pulse averages about 130; and until the third year is usually above 100. The stools normally number from 3 to 6 a day during the first two weeks; 1 to 3 a day after the first month.

The nursing woman should receive an abundant plain diet, with milk at bedtimes, avoiding tea, coffee, alcohol, spices, pastry, rich cakes, excessive sweets, and all indigestible articles. Regular hours of eating and sleeping, fresh air day and night, adequate rest and exercise, personal cleanliness, a daily bowel movement, and freedom from worry, are important. After the third or fourth month, substitute for the breast one or two feedings of bottle milk a day; and gradually wean the baby between the ninth and fourteenth months. The milk need not then be modified; and well-cooked cereals may also be given. Withdraw the breast at the rate of one additional daily nursing every two or three weeks, until the breast is abandoned altogether. Gerstley prescribes a mixed diet for every child of six months of age, whether breast fed or bottle fed.

If the baby does not do well, if it does not thrive, or vomits, or has frequent thin green stools containing curds and perhaps mucus, or perhaps fat particles in large quantity (shown by staining with Sudan III), or is constipated, with abdominal distension, flatulence, and colic, investigate into the cause. If there are no other symptoms than a failure to gain, the milk is either scanty or deficient in food elements. To ascertain the amount of milk secreted during twenty-four hours, weigh the baby both before and after each nursing on scales that indicate half-ounces, and refer to the "Nursing Schedule for Healthy Infants." To ascertain the quality of the milk, it must be analyzed, using the entire amount from one breast, or, more accurately, the entire twenty-four-hour secretion.

Normal human milk contains 1.6 per cent. protein, 4 per cent. fat, 7 per cent. sugar, and about 0.2 per cent. salts.

An accurate test for fat is Lewi's modification of the Babcock test. Measure out 2.92 c.c. of milk with the Babcock pipette, and place it in the Babcock graduated flask. Rinse the pipette, and add very slowly, to prevent great heat, 2.92 c.c. of chemically pure sulphuric acid, and mix until a homogeneous fluid results. Now add 0.6 c.c. of equal parts of amyl alcohol and strong hydrochloric acid; and then 50 per cent. sulphuric acid, enough to bring the fluid up to the neck of the flask. Centrifuge four minutes and read off the percentage of fat on the scale, each 0.1 on the scale representing 0.3 per cent. of fat.

The percentage of protein may be estimated approximately by the method of Boggs. Dilute the milk (1 : 10 for human milk, 1 : 20 for cow's milk), pour it into an Esbach tube up to the mark U, and add to the mark R the following reagent (phosphotungstic acid, 25 grams, concentrated HCl, 25 c.c., distilled water up to 250 c.c.). Stopper the tube and invert it several times so as to mix the contents. Then set aside for 24 hours, and read off the percentage of protein directly from the calibrations on the tube, if the dilution was 1 : 10, whereas with a dilution of 1 : 20 the figure is to be multiplied by two.

A more accurate method is that of Purdy. Fill a Purdy centrifuge tube with the diluted milk to the 10 c.c. mark, and add the reagent to 15 c.c. Centrifuge for three minutes and read the percentage directly.

The percentage of milk sugar is practically always 6 to 7 per cent., and need not be tested for.

The presence of pus cells, or blood, or of colostrum corpuscles after the twelfth day, contraindicates the use of the milk.

The examination of the milk, however, is much less important than the child's symptoms. Gerstley says: "Make up your mind that breast milk is always all right in quality." "Make up your mind that the only difficulties arising from breast feeding are those of quantity."

If the quantity of milk secreted is below normal, supplement it by the bottle, best given immediately after each breast nursing, and enjoin good hygiene and an abundant diet, with lots of milk, cereals, and beef, perhaps malt extract. Complete emptying of the breast at each nursing stimulates milk secretion.

If the milk is too rich, the child suffering from indigestion but not necessarily losing in weight, restrict the mother's diet to plain, bland food, excluding fats, sweets, alcohol, sour fruits, strawberries, asparagus, cabbage, cauliflower, turnips, sprouts, parsnips, cucumbers, radishes, lettuce, tomatoes, onions, watercress, parsley, celery, endive, peppers, spices, etc.; attend to her bowels, enjoin adequate exercise, sleep, and quiet, and limit each nursing to five minutes every three or four hours, seven or six or five nursings in twenty-four hours. Later lengthen the dur-

ation of each feeding up to the child's capacity. Some advocate giving ½ to 1 ounce of boiled water before each nursing.

The bottle may be substituted until the breast milk has improved, the breasts being emptied regularly with the breast pump.

If, in spite of good hygiene, etc., the baby does not thrive, or continues to suffer with indigestion, do not delay too long the substitution of artificial feeding.

Whenever sudden weaning is required, begin with a much weaker milk than the age of the infant normally indicates. If weaned at four or five months, begin with, say, formula III of Holt's schedule; but give four to six ounces every three hours, and increase the strength more rapidly than with a younger infant. If weaned at nine or ten months, begin with formula IV; but give six to seven ounces every three hours, and increase the strength and quantity rapidly. (Holt.)

In febrile conditions give the infant one or two ounces (1 oz. = 2 tablespoonfuls) of boiled water before each nursing.

Maternal nursing is contraindicated if the mother is tuberculous, epileptic, insane, pregnant, delicate, or suffering from puerperal convulsions, an acute disease (?), or a serious chronic disease, such as nephritis, cardiac insufficiency, malignant disease, severe anæmia, exophthalmic goitre, etc.; or where no milk is secreted; or the milk has proved inadequate on two previous occasions; or the infant is sickened, or does not thrive sufficiently on the milk in spite of intelligent care.

For vomiting, dyspepsia, intoxication, inanition, marasmus, prematurity, and constipation, consult the appropriate heading.

II. Artificial Feeding.—First ascertain the percentage of fat in the milk to be used, employing for this purpose the Babcock test described above. If the milk is a 5 per cent. milk (Jersey or Alderney) and it is desired to convert it into a 4 per cent. milk, skim off two ounces from one quart after standing four hours in the cold; if the milk is a 5½ per cent. milk, skim off three ounces. If it is desired to convert a 4 per cent. milk into a 5 per cent. milk, remove the upper 24 ounces from one quart of the 4 per cent. milk which has stood in the cold at least four hours. At the end of four hours the upper fourth contains nearly all the cream.

The amount of protein and sugar in all milks is practically the same, and need not be tested for; *e.g.*, about 3.2 per cent. protein, 4.5 per cent. sugar, and 0.7 per cent. salts. Whey contains 4.5 per cent. sugar, 0.9 per cent. protein, 0.7 per cent. salts, and no fat.

The normal specific gravity is 1.028 to 1.033. The removal of cream raises the specific gravity; the addition of water lowers it. A strongly acid or an alkaline milk is abnormal, indicating excessive bacterial growth in the former instance, and the use of preservatives in the latter. If the milk coagulates on heating, it is nearly sour and not good. The presence in the sediment after centrifuging, of blood cells or more than five pus cells in the field of an oil-immersion lens, is considered abnormal. Milk should not be used that is obtained within fifteen days before or five days after parturition. Cows should be tested annually with tuberculin, and all reacting animals excluded, unless the milk is pasteurized or boiled before using. The milk when obtained from the cow should be strained through three thicknesses of cheesecloth or absorbent cotton, and placed in cold spring water, or on ice, or in a cold cave. If it is the usual 4 per cent. milk, and the percentage method of feeding is employed, allow one quart to stand in the cold at least four hours before using. The upper 24 ounces then represents a 5 per cent. milk, which is the strength of milk used by some in the percentage method. Some use gravity cream and skimmed milk.

The paraphernalia required for the modification of the milk are a 16-ounce glass graduate, glass funnel, Chapin 1 ounce dipper (or bent tablespoon, which holds ½ ounce), 2-quart mixing pitcher, a new enamel or aluminum saucepan for boiling the food, graduated cylindrical nursing bottles with wide mouths, wire bottle rack, rubber nipples, bottle brushes, absorbent cotton, borax or boric acid, lime water, milk sugar, an ice-box, and, if desired, a Freeman pasteurizer.

After each nursing the bottle and nipple should be rinsed with cold water and washed with hot soap-suds, the nipple being turned inside out. The bottle should be kept full of water (or borax solution, a heaping teaspoonful to the bottle) and the nipple in a solution of borax or boric acid, one tablespoonful to the pint. The bottle and nipple should be rinsed before using.

All the milk for twenty-four hours should be prepared at one time. The sugar may first be dissolved in water, then added to the milk, after which the lime-water is added. The mixture is then poured into the bottles, representing the number of

nursings in twenty-four hours; the bottles are stoppered with cotton, pasteurized (heated to about 140° to 150° to 155° to 160° F. for thirty to twenty minutes) or sterilized (boiled for four or five minutes), then rapidly cooled by immersing in cold water, and placed in the ice-box. Boiling for one to three minutes, however, kills pathogenic germs, and is preferable to long boiling. Lime water is not added by many, but simple boiling is deemed all that is necessary to render the proteids digestible. The water is first brought to an active boil, then the milk is added with constant stirring to prevent the formation of a scum, and the whole is allowed to boil actively for three minutes. The sugar is added after removing the milk mixture from the stove, but while it is still hot. If the milk is not boiled, proceed as follows: Boil the required amount of water, and add to it the sugar while still hot but after removing from the stove. Do not add the milk until both milk and water are ice cold. Divide the food between the nursing bottles for the day, stop the latter with clean absorbent cotton, and place on ice.

Before feeding, the milk mixture is warmed to blood-heat by placing the bottle in a vessel of hot water. Test the temperature on the bare forearm. Mix the food well before using by pouring it into a clean pitcher and back again into the bottle.

It should take fifteen to twenty minutes for the baby to empty the bottle. If it takes less or longer than this, use a smaller or a larger holed nipple (the hole may be enlarged with a hot hatpin). If then the food is not all taken in twenty minutes, throw what is left away, and do not feed again until the next feeding time.

*At the fifth or sixth month, substitute for plain water, in making the dilutions, barley, rice, arrowroot, or wheat water (non-fermentable carbohydrate), if the bowels are free; oatmeal water (fermentable carbohydrate), if constipated.

The addition of cereal favors protein digestion. At the tenth or eleventh month, add to the dietary two or more teaspoonfuls daily of beef-juice (slightly broiled beef, expressed with a lemon squeezer, and flavored with salt), and also orange-juice, ½ oz., gradually increased to 2 oz., given about one hour before the second milk feeding. If boiled milk is used, add orange juice at the end of the first month, one teaspoonful daily (Gerstley); one tablespoonful twice daily. (Hill.)

Barley or other cereal water is made by boiling one even tablespoonful of the flour (1 oz. by weight = 100 calories) in twelve ounces of water for twenty minutes; or two tablespoonfuls of the grains, with a pinch of salt, in one quart of water, for six hours, the amount being kept up to one quart by the addition of water. After boiling, the gruel is strained through coarse muslin.

In the place of lime-water, one may use sodium or potassium bicarbonate or sodium citrate, gr. i–ii to the ounce, preferably the latter.

L. W. Hill (*Boston Methods of Infant Feeding*) uses, in the preparation of his percentage milk mixtures, top or gravity cream, *i.e.*, all the cream that is visible in a quart bottle that has stood for about six hours (usually about 6 oz. of cream). Its composition is about 16 per cent. fat, 4.5 sugar, and 3.2 per cent. protein. The underlying skimmed milk contains the same percentage of sugar and protein, but no fat. To make up a 16-ounce mixture containing f per cent. fat and p per cent. protein, use f ounces of 16 per cent. (gravity) cream and (p×5)— f ounces of skimmed milk. $\frac{p\times5}{16}$ of 4.5 (per cent. of sugar) = the per cent. of sugar contained in our mixture thus far. But we wish s per cent. sugar. The amount to be added is easily calculated when we know that 1 level tablespoonful of sugar raises the sugar percentage in a 16-ounce mixture 2.4 per cent.

To calculate the percentage of the three ingredients in a whole milk and water mixture, if the latter contains milk, 7 oz., and water, 14 oz., then,

$\frac{7}{14}$ of 4.0 = 2.0 per cent. of fat in the mixture.

$\frac{7}{14}$ of 4.5 = 2.3 per cent. of sugar in the mixture.

$\frac{7}{14}$ of 3.2 = 1.6 per cent. of protein in the mixture.

The addition of 1 level tablespoonful of sugar raises the sugar percentage in a 16-oz. mixture, 2.4 per cent.; in a 20-oz. mixture, 2 per cent.; in a 24 oz.-mixture, 1.6 per cent.; in a 32-oz. mixture, 1.2 per cent.; in a 40-oz. mixture, 1 per cent.; in a 42-oz. mixture, 0.95 per cent.; in a 48-oz. mixture, 0.80 per cent.

For constipation, vomiting, diarrhœa, intoxication, inanition, marasmus, and prematurity, consult the appropriate caption.

Principles and Application of the Chicago Method of Artificial Infant Feeding (Gerstley; see page 201).—1. All the elements of cow's milk are diluted and only carbohydrate added.

2. Boiling milk for one minute prevents enteric infection (dysentery, tuberculosis,

*See Table, the First Year Schedule.

	Interval between meals by day, 7 A. M. to 9 P. M.	Night feedings, 9 P. M. to 7 A. M.	Number of feedings, in 24 hours	Quantity for one feeding	Quantity for 24 hours	Stren
	Hours			*Ounces*	*Ounces*	Top-milk here means the upper 24 ounces fro available cow's milk is a 5 per cent. milk tablespoonful (leveled with a knife) of ri Lime-water is not added by many; but s Hill insists on 25 to 50 per cent. lime-w then the milk is added with constant st kills pathogenic germs. The sugar is a four-hour intervals of feeding from the b to its digestive powers and appetite, and
Second to seventh day	2	2	10	1–1½	10–15	I. Top-milk, 4 oz.; lime water, 1 oz.
Eighth day up to fifth week	2½	1	8	1½–3½	12–28	II. Top-milk, 5 oz.; lime water, 1 oz. III. Top-milk, 7½ oz.; lime water, 1¼ oz. IV. Top-milk, 10½ oz.; lime water, 1½ oz.
Fifth week up to third month	3	1	7	3–5	21–35	V. Top-milk, 14 oz.; lime water, 1¾ oz. VI. Top-milk, 15¾ oz.; lime water, 1¾ oz.
Third month up to sixth month	3	1	7	4–6	28–42	VII. Top-milk, 20 oz.; lime water, 2 oz. VIII. Top-milk, 22 oz.; lime water, 2 oz. IX. Top-milk, 27 oz.; lime water, 2¼ oz.
Sixth month up to tenth month	3	0	6	5–7½	30–45	X. Top-milk, 29¼ oz.; lime water, 2¼ oz.
Tenth month up to thirteenth month	4	0	5	7–9	35–32	XI. Top-milk, 31½ oz.; lime water, 2½ oz. XII. Whole milk, not over 1 quart to a twel

ARTIFICIAL NURSING SCHEDULE FOR THE FIRST YEAR

(PERCENTAGE METHOD. SEE BELOW ANOTHER MORE ACCURATE METHOD OF ESTIMATING PERCENTAGES).

th of milk ordinarily suitable for healthy infants.

one quart of 4 per cent. milk that has stood in the cold at least four hours (=5 per cent. milk). If the it may, of course, be used at once. One ounce of 5 per cent. milk has a caloric value of 22.5; one even sugar, 44.0 [1 gm. fat =○= 9.3 calories; 1 gm. carbohydrate =○= 4.1 calories; 1 gm. protein =○= 4.1 calories]. ple boiling is deemed all that is necessary to render the proteids digestible (no curds appear after boiling). in the mixtures, and says that small amounts do no good. The water is first brought to an active boil; ng, and the whole is allowed to boil actively for one to three minutes, perhaps preferably one minute; this d after removing the milk mixture from the stove. Boiling may not always be required. [Some advocate nning, and no night feedings.] These formulæ are given merely as a guide. Each child is to be fed according ot according to its age.

If the upper 20 from one quar 4 per cent. milk has stood four h is used, higher centages of fat obtained (=6 cent. milk), the centages of pr and sugar remai the same. One of 6 per cent. has a caloric v of 25.0.

	P.	*F.*	*S.*	*Calories*		*F.*	*Calori*
milk sugar, 2¼ level tablespoonfuls; water up to 20 oz.—0.70	1.00	4.84	189.0	About 100 calories for each kilogram (2½ lbs.; 45 calories per lb.) of body weight are required daily for the average healthy infant from the third week to the sixth month; 125 to 150 calories (56 to 68 per lb.) are required for very active infants, and for those under weight.		1.20	199.(
milk sugar, 2¼ level tablespoonfuls; water up to 20 oz.—0.85	1.25	5.04	211.5			1.50	224.(
milk sugar, 3 level tablespoonfuls; water up to 25 oz.—1.05	1.50	5.70	300.7			1.80	319.5
milk sugar, 3¾ level tablespoonfuls; water up to 30 oz.—1.20	1.75	5.93	401.2			2.10	427.5
milk sugar, 4⅛ level tablespoonfuls; water up to 35 oz.—1.40	2.00	6.17	505.7			2.40	540.7
milk sugar, 4 level tablespoonfuls; water up to 35 oz.—1.60	2.25	6.00	530.4			2.70	569.7
milk sugar, 4½ level tablespoonfuls; water up to 40 oz.—1.75	2.50	6.19	648.0			3.00	698.(
milk sugar, 4¼ level tablespoonfuls; water up to 40 oz.—1.90	2.75	6.17	682.0			3.30	727.(
milk sugar, 4½ level tablespoonfuls; water up to 45 oz.—2.10	3.00	6.20	805.5			3.60	873.(
milk sugar, 4 level tablespoonfuls; water up to 45 oz.—2.25	3.25	6.00	834.1	After the fifth month the number of calories required gradually diminish to about 75 to 80 (32 to 35 per lb.) at the end of twelve months.		3.90	907.2
milk sugar, 4 level tablespoonfuls; water up to 45 oz.—2.40	3.50	6.20	884.7			....	....
-month baby.....—3.50	4.00	4.50	900.0				

In fevers the bottle milk should be diluted at least one-half.

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If the upper 16 oz. is used (7 per cent. milk), still higher percentages of fat are obtained, the protein and sugar remaining the same. One ounce of 7 per cent. milk has a caloric value of 27.5.

If lower percentages of fat are desired, with the same percentages of protein and sugar, use whole 4 per cent. milk, one ounce of which has a caloric value of 20.0.

Still lower percentages of fat are obtained by using the remainder from one quart of 4 per cent. milk that has stood four hours, after skimming off 2 oz. (=3 per cent. milk); 4 oz. (=2 per cent. milk), or 8 oz. (=1 per cent. milk). The percentages of protein and sugar are not altered.

es			3 per cent. milk, 1 oz. =○= 17.5 cal.		2 per cent. milk, 1 oz. =○= 15 cal.		1 per cent. milk, 1 oz. =○= 12.5 cal.	
	F.	*Calories*	*F.*	*Calories*	*F.*	*Calories*	*F.*	*Calories*
)	1.40	209.0	0.80	179.0	0.60	169.0	0.40	159.0	0.20	149.0
)	1.75	236.5	1.00	199.0	0.75	186.5	0.50	174.0	0.25	161.5
	2.10	338.2	1.20	282.0	0.90	263.2	0.60	244.5	0.30	225.7
	2.45	453.7	1.40	375.0	1.05	348.7	0.70	322.5	0.35	296.2
	2.80	575.7	1.60	470.7	1.20	435.7	0.80	400.7	0.40	365.7
	3.15	609.1	1.80	491.0	1.35	451.6	0.90	412.2	0.45	372.9
)	3.50	748.0	2.00	598.0	1.50	548.0	1.00	498.0	0.50	448.0
)	3.80	792.0	2.20	627.0	1.65	572.0	1.10	517.0	0.55	462.0
)	....	.....	2.40	738.0	1.80	670.5	1.20	603.0	0.60	535.5
	....	.....	2.60	761.0	1.95	687.8	1.30	614.7	0.65	541.6
	....	.....	2.80	806.0	2.10	727.2	1.40	648.5	0.70	569.7

Sweetened condensed milk (1 oz. =○= 132 calories) diluted twelve times (P., 0.5; F., 0.6; S., 3.6) for an infant under one month, and ten to six times for older children, is sometimes of temporary benefit. To unsweetened condensed or evaporated milk sugar should be added. Equal parts of the average unsweetened condensed milk and water is equivalent to whole milk. If condensed milk is used longer than a month, give orange juice once a day.

INFANT FEEDING

CHICAGO OR MIDDLE WEST METHODS OF INFANT FEEDING (GERSTLEY)

ARTIFICIAL NURSING SCHEDULE

Age	Feeding intervals by day, 6 A. M. to 9 P. M.	Night feedings, 2 A. M.	Number of feedings in 24 hours	Quantity at each feeding	Total quantity in 24 hours	Formulæ (To be used merely as a guide)
	Hours			*Ounces, about:*	*Ounces, about:*	
First two weeks.....	3	1	7	1–2	15	About 1 part milk + 2 or 3 parts water + 3 per cent. non-fermentable carbohydrate, *e.g.*, dextri-maltose: milk (after shaking), 4 oz., water, 12 oz., dextri-maltose, roughly 4 teaspoonfuls, leveled with a knife. Boil gently one minute after coming to a boil, divide into seven bottles, stopper with clean absorbent cotton, cool rapidly in cold water, and place in an ice-box, cave, or running water. Heat to body temperature in hot water before feeding. Test the temperature on the bare forearm. Mix before feeding by pouring into a clean pitcher and back again into the bottle.
Third week to second month	3	1	7	2–2½	15–20	About 1 part milk + 2 parts water + 3 per cent. dextri-maltose: milk, 6 oz., water, 12 oz., dextri-maltose, roughly 4½ teaspoonfuls. The food should be taken in fifteen to twenty minutes. If it is taken quicker than that, use a nipple with a smaller hole; if not taken in twenty minutes, use a nipple with a larger hole (the hole may be enlarged with a hot hairpin). If then the food is not all taken in twenty minutes, throw what is left away, and do not feed again until the next feeding time.
Second month.....	3	1	7	2½–3	20–25	About 1 part milk + 1 part water + 3 per cent. dextri-maltose: Milk, 10 oz.; water, 10 oz.; dextri-maltose, 5 teaspoonfuls. Add orange juice, 1 teaspoonful daily, about one hour before the second feeding, at the end of the first month.
Third month or latter half of third and first half of fourth month	3½	0	5	6	30	About 2 parts milk + 1 part water + 3 per cent. dextri-maltose: Milk, 20 oz.; water, 11 oz.; dextri-maltose, 8 teaspoonfuls.
Fifth or sixth month..	3½–4	0	5–4	6–7	30	About 2 parts milk + 1 part water + 3 per cent. dextri-maltose. Begin to add very gradually a mixed diet including vegetable or chicken broth, Graham cracker or zwieback soaked in the broth or in the bottle milk, or chewed dry, well-cooked cereals, *e.g.*, farina, cornstarch, arrowroot, Cream of Wheat, purées of spinach, carrots, and potato, fruit juices, *e.g.*, orange juice, prune juice, apple sauce, beef juice, bacon. On the first day, after the second meal, add a half teaspoonful of farina or cornstarch (see below). It may be vomited; but repeat the next day. Gradually increase the dose day by day until, by the end of two or three weeks, the whole amount is given. A few days after starting the cereal give, in addition, a little broth or a teaspoonful of vegetable purée, after the 2 P. M. bottle. Increase the broth in a few days to an ounce or more, then break a few crumbs of zwieback into the broth. In two or three weeks, at 2 P. M., may be given broth, zwieback, a little vegetable and beef juice, 1 teaspoonful or more a day, or bacon. As the mixed diet is increased the baby takes less of the bottle. In the first few days of the changed diet the baby does not gain much.

To prepare farina or cornstarch, add a tablespoonful to a cup of water, boil for half an hour, adding fresh water to make up for that lost. Then add half a cup of milk and boil a few minutes longer, stirring constantly. Add a pinch of salt and a very little sugar. If a double boiler is used the cereal must be cooked for over four hours. To obtain beef juice, cut the beef into tiny cubes, sear the outside in a hot pan, and squeeze out the juice. Bacon should be soaked in water to remove salt, and broiled crisp.

A 4 per cent. cow's milk (3.5 per cent. protein, 4 per cent. fat, 4.5 per cent. sugar), which is the average, diluted with two parts of water, gives about 1 per cent. protein, 1.3 per cent. fat, and 1.3 per cent. sugar; diluted with one part of water, or half and half, gives 1.5 per cent. protein, 2 per cent. fat, and 2 per cent. sugar; three-quarters milk and one-quarter water gives 2.25 per cent. protein, 3 per cent. fat, and 3 per cent. sugar. The 6 to 7 per cent. sugar contained in human milk is obtained by the addition of sugar. The milk ingredients most difficult of digestion are the fat and sugar, not the protein.

etc.) and renders the proteids more digestible. No curds appear in the stools when using boiled milk. The addition of orange juice to the dietary at the end of the first month, one teaspoonful daily, about one hour before the second milk feeding, prevents the development of scurvy. In infants fed with boiled milk most of the disturbances that arise are due to (1) carbohydrate fermentation induced either by the combination of too much fermentable carbohydrate (lactose or cane sugar) and too concentrated whey (salts) or too much carbohydrate and too much fat, producing diarrhœa with greenish, watery, sour-smelling, acid stools, or (2) one of many parenteral factors (a "cold," cystitis, otitis, constitutional disease, nervous irritation, heat, etc.).

3. High sugar plus concentrated whey causes an acid diarrhœa. High sugar plus diluted whey is better borne. Concentrated whey without carbohydrate is well borne. High sugar plus high fat causes an acid diarrhœa. High fat plus high protein, low whey, and non-fermentable carbohydrate (*e.g.*, albumen milk) is well borne. The fat is thereby rendered harmless. Fat in an acid intestine favors diarrhœa. Fat in an alkaline intestine (rendered alkaline by protein) favors constipation. High fat feeding with insufficient carbohydrate produces flabby, pasty, constipated, non-thriving infants. High starch feeding produces emaciated, weak infants.

4. If, when first seen, the baby is weak, or has dyspepsia or a parenteral infection (a "cold," cystitis, etc.), never order over 3 per cent. carbohydrate to begin with. Later, according to the reaction, this may be increased gradually to 5 per cent. In beginning decomposition (malnutrition, atrophy, marasmus) and also following recovery from an infection, more carbohydrate is needed. It should then be given in a non-fermentable form so as not to disturb the intestine.

5. The weight curve should be the guide in feeding. If there is a gain of 5 to 7 ounces per week and the baby looks well, let it alone, ignoring slight vomiting, diarrhœa, or colic, but, at the same time, excluding as a cause of the gain in weight high sugar or salt mixtures, nephritis, or fever, all of which cause water retention, and also rickets which may be associated with a gain in weight. If vomiting is severe and the baby nevertheless gaining, reduce the daily total quantity of food. If the baby is not gaining, do not reduce the total amount, but give less at each nursing and nurse oftener. (See also Vomiting.) The normal stool is described as soft, smooth, homogeneous, and yellow, but green, slightly watery, somewhat acid, mucous and curdy stools may occur in healthy infants. If the child is contented and thrives, ignore the stool. If there is only one stool a day and the baby is happy and thriving, do not interfere.

6. If the weight becomes stationary or drops, and the stools are not more than 2 or 3 per day, and the baby appears hungry (cries directly after nursing, sucks the fingers between nursings, frets before nursing time, seizes the nipple eagerly and empties the bottle rapidly), add a few ounces to the total quantity of food. If, however, the baby does not appear hungry, increase only the milk by 1 or 2 ounces, or the carbohydrate by 1 to 2 per cent., but not both together. Increase the carbohydrate (to 4 to 5 per cent.) if there is constipation, using a fermentable sugar (lactose or saccharose) to correct the constipation.

7. If the weight becomes stationary and the stools are 4 or 5 daily, and fermentative (greenish, watery, acid, sour-smelling, mucous), the cause is either underfeeding, when the baby will manifest hunger symptoms, or it is dyspepsia, which is manifested by loss of appetite. If underfeeding is the cause, cautiously increase the total daily quantity, but not the carbohydrate. If beginning dyspepsia is the cause, give the patient only what he desires and wait. If, added to the anorexia and diarrhœa, slight fever develops, the skin becomes ashen gray, and the weight begins to drop, this means definite dyspepsia with beginning intoxication or decomposition (see Diarrhœa in Bottle-Fed Infants; and Marasmus).

8. The daily total of food should rarely be increased much over a quart (about 32 ounces), so that if, at the fifth to sixth month, the baby ceases to gain, start gradually to add more food in the form of a mixed diet.

9. Use the caloric system chiefly as a check. The average infant under four months of age and moderately thin infants of any age, says Dennett, need 50 to 55 calories per pound; emaciated infants need 60 to 65 calories per pound; fat infants over four months of age need 40 to 45 calories per pound. The baby should be weighed regularly twice a week. The average weight at birth is about 7⅓ pounds. The infant should regain its birth-weight, following the first three or four days' loss, by the end of the tenth day. Thereafter it should gain about 6 to 8 ounces a week under six months of age.

One	ounce	of	4 per cent. milk	yields 20	calories
"	"	"	5 " " "	" 22.5	"
"	"	"	cane sugar (2 tablespoons leveled with a knife)	" 120	"
"	"	"	milk sugar (3 " " " " ")	" 120	"
"	"	"	dextri-maltose (4 " " " " ")	" 120	"
"	"	"	malt soup extract (2 " " " " ")	" 90	"
"	"	"	flour (4 " " " " ")	" 100	"

and 3 to 4 ounces a week thereafter. It should about double its birth-weight in six months, and treble it in a year to fourteen months.

Meade's dextri-maltose contains 51 per cent. maltose and 47 per cent. dextrins. Malt soup extract contains about 59 to 62 per cent. maltose, about 15 per cent. dextrins, and 7 grains of potass. carbonate to the ounce. Mellin's Food contains 58 per cent. maltose and 20 per cent. dextrins; its composition is P., 10; F., 0.16; S., 80. Horlick's Malted Milk contains P., 16; F., 9; S., 67.

10. Correct hygiene, proper clothing, fresh air, bathing, protection against flies, cleanliness, etc., is of prime importance.

11. For constipation; vomiting; diarrhœa; intoxication (cholera infantum); inanition; decomposition (malnutrition, atrophy, marasmus); prematurity; or anorexia, consult the appropriate caption.

One ounce of barley (oatmeal if constipation occurs) is boiled in one pint of water, a pinch of salt added, and the whole strained; then sugar is added, then milk. The latter may be boiled for three minutes, if need be.

Feeding During the Second Year.—*Thirteenth Month.*—At 7 or 8 A. M., 6 to 8 oz. milk, mixed with 2 to 3 oz. strained barley or wheat gruel, cooked at least three hours, flavored with salt and sugar; small piece of zwieback or toast. At 10 or 11 A. M., a cup (8 oz.) of warm milk. At 12 or 1 P. M., 4 to 8 oz. beef, veal, mutton, or chicken broth; well-cooked cereal, macaroni or spaghetti; puréed spinach, carrots or potato; stale bread, toast, or cracker; milk, 4 or 5 oz. orange juice, 1 to 2 oz. At 5 or 6 P. M., 6 to 8 oz. milk, mixed with 2 to 3 oz. strained barley or oatmeal gruel cooked at least three hours and flavored with salt and sugar; small piece of zwieback; apple sauce or prune juice. At 9 or 10 P. M., a cup (8 oz.) of warm milk.

Fifteenth Month.—At 7 or 8 A. M., 8 oz. milk with 6 oz. strained barley, oatmeal, or wheat gruel, cooked three hours, and flavored with salt; or milk and stale bread. At 12 or 1 P. M., well cooked cereal, stale bread; beef juice, 1 to 2 oz., orange juice, 1 to 2 oz.; custard or tapioca, milk, 4 or 5 oz.; or 8 oz. beef, veal, mutton, or chicken broth, with stale breadcrumbs, or a little barley added; or scraped beef or minced chicken, milk, 4 to 5 oz.; 1 to 2 oz. orange juice. At 5 or 6 P. M., 8 oz. milk mixed with 6 oz. strained, well-cooked gruel, flavored with salt; crackers, zwieback, or stale bread. At 9 or 10 P. M. 8 to 10 oz. of warm milk.

(Meat juice is prepared as follows: four parts of finely chopped fresh raw steak is stirred with one part of cold water allowed to stand for half an hour in the cold, and the juice then expressed through a cloth or meat press; or cubes of meat may be seared in a hot pan and the juice then expressed with a lemon squeezer).

Eighteenth Month.—At 7 or 8 A. M., 8 oz. milk with 8 oz. gruel; *or* 1 to 3 tablespoonfuls oatmeal or other porridge cooked at least three hours, with 2 tablespoonfuls cream; milk to drink; *or* 1 egg boiled three minutes, with stale bread and milk. At 12 or 1 P. M., 1 egg boiled three minutes, with stale bread and butter; 4 ounces clear soup; 2 to 4 ounces orange juice, or baked

Wachenheim's Modification of Jacobi's Schedule.

Formula No.	Age.	Number of feedings.	Ounces per meal.	Ounces of milk.	Ounces of sugar.	Ounces of barley water	Calories per kilo.	P.	F.	S.	Salts.
I	Birth	6	1.5	1.5	0.25 (¼)	7.5	25	0.7	0.7	4.5	0.13
II	1 week	6	2.0	3.0	0.375 (⅜)	9.0	45	1.0	1.0	5.1	0.19
III	2 weeks	6	2.5	5.0	0.5 (½)	10.0	55	1.2	1.3	5.7	0.25
IV	1 month	6	3.0	7.0	0.75 (¾)	11.0	65	1.4	1.5	6.8	0.30
V	2 months	6	4.0	11.0	1.0	13.0	75	1.7	1.8	7.0	0.34
VI	3 months	6	5.0	15.0	1.25 (1¼)	15.0	85	1.8	2.0	7.2	0.38
VII	4 months	5	6.0	18.0	1.25	12.0	85	2.0	2.3	7.4	0.43
VIII	5 months	5	7.0	22.0	1.25	13.0	90	2.2	2.5	7.1	0.48
IX	6 months	5	8.0	26.0	1.25	14.0	95	2.4	2.7	6.6	0.52
X	8 months	5	8.0	30.0	1.25	10.0	100	2.7	3.0	7.0	0.57
XI	10 months	5	8.0	34.0	1.0	6.0	100	3.0	3.4	6.6	0.63

To be used merely as a guide

apple, or stewed prunes, strained. *Or*, 8 oz. meat broth, with barley, rice, or breadcrumbs added; stale bread and butter; rice and milk pudding, or junket (curds and whey) made by adding a junket tablet or two teaspoonfuls of essence of pepsin or liquid rennet to a pint of fresh, lukewarm milk and allowed to stand at room temperature until firmly coagulated; a cooked fruit, as above. Baked potato, or puréed spinach or carrot; finely minced meat. (Potatoes cooked in their skins retain the potassium salts.)

Hill says: "It is a bad mistake to feed eggs to most babies under fifteen or sixteen months."

Feeding from the Third to the Sixth Year.—*Breakfast, 7 to 8 a. m.*—Oatmeal, wheaten grits, cornmeal, farina, hominy, or arrowroot, cooked at least three hours, flavored with salt and a little sugar and served with cream; stale bread and butter; milk; orange juice. *Or*, one egg, boiled three minutes, or lightly poached, or scrambled, or coddled (*i.e.*, placed in cold water on the stove, the water allowed to come to a boil, then removed from the stove, the egg being allowed to remain in the water for a minute or two after removing from the stove); stale bread and butter; milk; orange juice.

Lunch, 10 a. m.—A cup of milk and a cracker. This is, perhaps, best omitted.

Dinner, 12 to 1 p. m.—Beef, veal, mutton, chicken, clam, or oyster broth, thickened if desired with a cereal; rare roast beef or beefsteak, rare mutton chop or lamb, or chicken; mashed baked potato mixed with cream or meat juice; a green vegetable, well cooked and mashed—spinach, cauliflower tops, asparagus tips, stewed celery, peas, young string beans; dessert—junket, or rice and milk pudding, or custard, or tapioca pudding; ice-cream once a week.

Supper, 5 to 6 p. m.—Gruel, milk, milk toast, stale bread and butter; baked apple or stewed prunes.

Articles Prohibited (Holt).—"Meats: ham, sausage, pork in all forms, tripe, salt fish, corned beef, dried beef, goose, duck, game, kidney, liver, meat stews and meat dressings." Give meat no oftener than once a day.

"Vegetables: Fried vegetables of all varieties, cabbage, potatoes (except when boiled or baked), raw or fried onions, raw celery, radishes, lettuce, cucumbers, tomatoes (raw or cooked), beets (unless very small and fresh), eggplant, and green corn.

"Bread and cake: All hot bread and rolls, buckwheat and all other griddle cakes, all sweet cakes, particularly those containing dried fruits and those heavily frosted.

"Desserts: All nuts, candies, pies, tarts, and pastry of every description; also all salads, jellies, syrups, and preserves.

"Drinks: Tea, coffee, wine, beer, cider, and soda-water.

"Fruits: All dried fruits, bananas, all fruits out of season and stale fruits, particularly in summer"; watermelon; green fruits; any of the orange but the juice.

Infantile Convulsions.—See Convulsions of Infancy and Childhood.

Meningeal Hemorrhage.—See Hemorrhage, Meningeal, in the New-Born; and Spastic Paralysis.

Paralysis.—See Spastic Paralysis; Infantile Cerebral Paralysis; and Poliomyelitis, Acute.

Scurvy.—See Scurvy, Infantile.

Infantilism.—**Causes.**—Chronic debilitating or toxic affections, *e.g.*, syphilis, tuberculosis, malaria, ankylostomiasis, congenital heart disease, adenoids and enlarged tonsils, lymphatism (?), renal insufficiency (?), plumbism, tobacco addiction, alcoholism; and other causes, *e.g.*, hypothyroidism (cretinism), hypopituitarism, hypoadrenalism (?), pancreatico-intestinal dyscrasia or hypopancreatism, absence of certain vitamines in the diet (?), unknown causes.

Treatment.—Get at the cause and correct it, if possible. Correct hygiene, of course, is essential: clean, nutritious food, fresh air day and night, light, warm clothing, adequate rest and exercise, a daily morning warm bath in a warm room, followed by a cool spinal douche and brisk rubbing with a coarse towel, or a warm bath at night, regular hours of eating and sleeping, rest before and after eating, regulation of the bowels, perhaps massage.

Thyroid extract, pancreatic extract, and hypophyseal extract (see Part 11) may be tentatively tried. Specific growth-producing vitamines occur in fresh milk, fresh eggs, fresh meat, yeast, meat extract, yeast extract, testicular extract, pancreas, malt, cereals not deprived of the pericarp, brans, all rapidly growing vegetables, and in Hongo or Katjang idjo beans. Another kind of vitamine occurs in eggs, meat, fish, brain, cereals, legumes, fresh vegetables, and yeast. It is the freshness of the food that is the essential desideratum. Vitamines are destroyed by drying, pressing, tinning, processing, pickling, autoclaving.

Infarction.—L. *infarcīre*, to stuff in. See Embolism.

Inflammation or Infection, Local.—L. *inflammātio; inflammāre*, to set on fire. I.

Acute. Prescribe local and systemic rest, and a light, nutritious diet, and see that the bowels and kidneys are active.

In the early stages, cold may be applied, with the object of aborting the inflammatory process; but if it is ineffectual, heat should be applied in the form of hot air, hot water bags, hot poultices, or hot boric acid or bichloride solution, in order to promote the reaction of inflammation. Bier's hyperæmia is also employed for this purpose. It is obtained either by means of vacuum cups, or by compression of the veins proximal to the site of inflammation with a bandage or Martin rubber band. The constriction should not cut off the arterial circulation, or cause pain, white œdematous swelling, coldness, or anæsthesia. In inflammation of the foot it is placed above the knee; in inflammation of the hand it is placed above the elbow. It is kept on for from one to three hours a day or longer. Vacuum cups should not be kept on any longer than from one to three hours. For the purpose of preventing the rapid absorption of toxins, Kanavel applies Bier's constriction for from twelve to eighteen hours, and sometimes reapplies it for another eighteen hours, after an intermission of several hours.

Should suppuration occur, make one or more free incisions, and drain the abscess cavity by means of gauze or gutta percha strips. Do not scrape the walls of the cavity, but use the finger or blunt closed hæmostatic forceps to break down necrotic tissue. Do not irrigate as a rule, but use dry dressings, which should be changed every day, or less often as required to keep the parts dry. The gauze may be anointed with sterile vaseline to prevent sticking. If irrigation is deemed advisable, boric acid (℥ii ad Oi) or normal saline solution (℥i ad Oi) is perhaps the best, because the least irritating. The presence of pus is indicated by a brawny, dark-red induration; not a pink, pitting œdema. Before making the incision, it is well to have the patient press gently over the whole involved area, in order to locate the point of greatest tenderness. The incision, as a rule, should be made here.

For the treatment of infected wounds, see Wounds.

In gas infection (caused by the saprophytic anaërobes: B. perfringens or aërogenes capsulatus Welchii, B. œdematiens, B. sporogenes, vibrion septique), revealed by the presence of crepitation due to subcutaneous emphysema, if multiple free incisions, to remove gaseous pressure and also all foreign material, blood-clots and dead or infected muscle (muscle that is dull, dry, pale lustreless pink or brick red, or that does not contract or bleed; infection spreads along the fibres of individual muscles, not from one muscle to another), continuous irrigation with Dakin's solution, rubber or gauze drainage and absolute local rest is not promptly remedial, resort to high amputation at once. In case of doubt, amputate. Do a guillotine (circular, no flap) amputation, leaving the stump open. It need not be carried above the area of crepitation.

Hospital gangrene is manifested by the appearance of a dirty gray adherent membrane associated with severe toxemia, and is due to streptococci. Apply under ether, concentrated nitric or nitro-hydrochloric acid, or acid nitrate of mercury, bromine, or the actual cautery (Keen).

Tuberculous abscesses demand special treatment (see Orthopædics, Part 10).

Superficial inflammatory processes may be treated with benefit by means of ionization.

Ionic medication, or cataphoresis, Gr. *κατά* across + *φόρησις* bearing, is the introduction of medicinal substances, usually antiseptics, into and through the skin and mucous membranes by means of the action of the constant current (see Medical Electricity). The medicinal substances used must be electrolytes, that is, their solutions in water must be good conductors of electricity, during the passage of which the dissolved substance undergoes a chemical decomposition, with the migration of a part to the anode (anions, carrying a negative charge) and a part to the cathode (kathions, carrying a positive charge. For example, if a current of electricity be conducted through an aqueous solution of zinc sulphate, the zinc ions, positively charged, will migrate to the cathode, and SO_4 ions, negatively charged, will migrate to the anode, according to the law that like charges repel one another and unlike charges attract one another. Kathions are those of zinc, copper, silver, mercury, magnesium, lithium, the alkaloids (cocaine, quinine), adrenalin, ammonia, hydrogen, etc. They enter, of course, only from the anode. Anions are those of the halogens (chlorine, iodine), the acid radicles, and hydroxyl (OH). They enter, of course, only from the cathode.

The apparatus for ionic medication consists of a steady galvanic current, with the conducting cords preferably of flexible stranded copper wire, insulated with India-

rubber. The electrode employed for flat surfaces is a metal (say aluminum) disc, about two inches in diameter, pierced with small holes around its margin, through which three layers of thick felt may be attached with thread. The first layer of felt is larger than the metal disc, and each succeeding layer larger than the preceding. The felt, before using, should receive a prolonged soaking in hot ammonia or soda water, in order to dissolve out all grease.

Between the felt-covered electrode and the skin is placed a table napkin folded four times, so as to form sixteen layers. This is soaked in the electrolytic solution to be used. A 1 per cent. solution is generally employed. Metal rod or button electrodes are used for the ionization of ulcers, metal sounds for fistulæ and sinuses, and needles (preferably zinc) for the purpose of piercing the part to be ionized.

The skin should first be freed of grease, by means of soap and water, and rinsed. Abrasions or acne lesions should be covered with collodion or adhesive plaster. The folded napkin (or lint or cotton wool), well moistened with the electrolytic solution, is applied smoothly and evenly, in order to avoid irregular penetration; then the well-moistened felt-covered electrode is applied, and the whole bandaged on firmly.

A steady galvanic current is employed. It is turned on very slowly up to the maximum required; then, after no longer than fifteen to twenty minutes, it is turned slowly off. If point pain is complained of, examine to see that no blister or burn is being produced. If the current is applied too long, there is danger that superficial necrosis may be produced.

Zinc is perhaps the best electrolyte for antiseptic use, because it is more penetrating, and is not precipitated by the body fluids like silver or mercury, and thus early thrown out of action. (After Lewis Jones.)

For painful wounds employ a 2 per cent. solution of sodium salicylate, 2 milliampères per square centimetre, for one hour.

In treating sinuses and fistulæ, first cleanse the passages, and then fill them with a solution of the electrolyte, copper sulphate or zinc sulphate. Insert a positive copper or zinc electrode, and employ a current of 6 to 8 ma. for six to eight minutes. Gradually reduce the current; then reverse it to 2 or 3 ma. for a short time in order to loosen the electrode from the tissues. One or two treatments a week may be given. See also Ulcers, Cutaneous; and the various captions covering inflammatory conditions.

II. Chronic. Here are employed heat, electricity, counter-irritation, massage, and active and passive movements.

Inflammatory Rheumatism.—See Rheumatic Fever.

Influenza; La Grippe.—Ital., "influenza"; Fr. La Grippe. An acute endemic, epidemic, and pandemic infectious disease caused by the bacillus influenzæ, and characterized by an incubation period of from one to four days, followed, usually abruptly, by chilliness, fever, malaise, anorexia, headache and muscular and neuralgic pains, prostration, and respiratory inflammation (naso-pharyngitis, sinusitis, tonsillitis, otitis media, laryngitis, tracheitis, bronchitis, broncho-pneumonia, pleuritis, even pulmonary abscess and gangrene). The symptomatology is complex. Conjunctivitis is common. Gastro-intestinal symptoms may predominate. Severe neuralgias and other nervous symptoms may arise. Peripheral neuritis occurs in children. There is an influenzal meningitis and encephalitis. The myocardium is apt to share in the general muscular debility. The disease sometimes resembles typhoid fever. There is usually little or no leucocytosis.

A chronic cough, with perhaps occasional hæmoptysis, simulating tuberculosis, may follow the acute attack, and be due to chronic influenzal bronchitis, bronchiectasis, solidification, or cavity formation.

The diagnosis of influenza is made from the microscopic and cultural characteristics of the bacillus. The common endemic, catarrhal fever, commonly called the grip, may reveal no influenza bacilli, but only the streptococcus, pneumococcus, or micrococcus catarrhalis.

Prognosis.—In uncomplicated cases the prognosis is usually good, and the majority of cases convalesce rapidly after an illness of from three to five days. Recurrences, however, are common. Sometimes convalescence is prolonged for months.

Treatment.—Put the patient to bed, and keep him there for at least four to six days after defervescence. Prescribe a liquid or soft, but nutritious, diet, with plenty of water. Open the bowels with calomel followed by a saline (see Part 11). A hot bath in a warm room, the patient going immediately to bed between warmed blankets, with hot water bottles to the feet, and a drink of hot lemonade with a little whiskey, and perhaps a dose of quinine, gr. v, with aspirin, gr. v, or a dose of Dover's powder, gr. v–x, may prove very beneficial.

To prevent reinfection and the spread of

the disease, the respiratory secretions and the patient's person and surroundings should be treated just as in tuberculosis (*q.v.*, see also Disinfection).

For the nose and throat, employ alkaline antiseptic sprays and gargles, such as Dobell's solution or liquor antisepticus alkalinus (Part 11). Consult also Nose Diseases, Part 8, and Throat Diseases, Part 9.

For headache and general pains, employ the ice-cap or hot water bag, the thermocautery, electricity, chloroform liniment, menthol, oil of wintergreen, or internal analgesics, *e.g.*, salipyrin, antipyrin, lactophenin, phenacetin with salol, aspirin, Dover's powder, with or without antipyrin or phenacetin; codeine, with phenacetin. Ortner prefers salipyrin and aspirin. Holt gives to a child of one year, phenacetin, gr. i, with codeine, gr. $\frac{1}{40}$, every three or four hours; to a child of two years, double the dose. Remember, however, that these drugs are cardiac depressants (for Drugs see Part 11).

For depression and prostration, employ strychnine.

For high fever, one may employ cold sponging or the cold pack (see Fever), but, says Ortner, "the antipyretics are preferable to cold baths"; "in general, heat is preferable to cold."

For cough with difficult expectoration, prescribe ammonium chloride or calcium iodide or sodium benzoate, with plenty of water, for several days. For an irritative cough prescribe codeine, heroin, or morphine. Apply mustard poultices or large flaxseed poultices to the chest. Medicated steam inhalations are useful (see Bronchitis, Acute). Indeed, the disease should be treated symptomatically (consult the appropriate captions).

℞ Ammonii chloridi..... ʒii (gr. x per dose)
Ammonii carbonatis..... ʒi (gr. v per dose)
Sodii bicarbonatis..... ʒi (gr. v per dose)
Fluidextracti senegæ..... ʒiii (♏xv per dose)
Vini ipecacuanhæ..... ʒi (♏v per dose)
Aquæ chloroformi, q.s., ad ʒvi

M. Sig.—One tablespoonful every two hours in hot water as required. Yeo's (modified) expectorant mixture.

Quinine is well recommended in influenza. Croftan gives quinine and aspirin, aa gr. v, every five hours for three or four days, and recommends a little whiskey throughout the illness. In high fever and delirium, phenacetin may be combined with the quinine, but quinine and aspirin had better be given separately, because of the danger of the formation of the very poisonous quinotoxin when the two drugs are in contact for some time.

During convalescence prescribe fresh air, warm clothing, an abundance of good food, and elixir of iron, quinine, and strychnine. Give codliver oil and creosote for persistent cough. The heart may at this time show some irregularity in rate and rhythm, due, perhaps, to parenchymatous myocarditis (see Myocarditis). Leonard Williams advises the administration of thyroid extract during convalescence, because of the depressant action of influenza upon the thyroid gland; but the drug should be used with caution where the heart is affected.

After the patient has left his room, the latter should be fumigated with formaldehyde. See Disinfection.

Injuries to Soft Parts.—See Contusion.

Insolation.—L. *in*, in + *sol*, sun; *insolāre*, to expose to the sun. See Sunstroke.

Insomnia.—L. *in*, not- + *somnus*, sleep.

Causes.—A heavy supper, or the taking of food or drink, especially tea or coffee, soon before retiring; use of tobacco just before retiring; mental activity, intellectual or emotional, just before retiring; ill-ventilated bedroom; cold feet; constipation; gastro-intestinal disturbance; gastric hyperacidity; overwork; mental strain; exhaustion from insufficient food; neurasthenia; hysteria; insanity; drug addiction: tobacco, tea, coffee, alcohol, cocaine, morphine, etc.; hyperthyroidism and thyroid medication; pyrexia; pain; dyspnœa; cough, cerebral anæmia; cerebral hyperæmia; arteriosclerosis; gouty or rheumatic diathesis; cardiac, renal, pulmonary, and other diseases; heredity (?).

Treatment.—Attend to the cause. In insomnia due to mental activity, the latter should be avoided for at least an hour before retiring, when it is also best to take a little exercise in the open air. The bedroom should, of course, be well ventilated. For physical or mental exhaustion, Yeo recommends a "teacupful of beef-tea or gruel or arrowroot with a dessertspoonful of brandy," before retiring. The bromides (Part 11) are here of service. For insomnia due to gastric hyperacidity, prescribe sodium bicarbonate, gr. x–xxx in a tumblerful of hot water fifteen minutes before bedtime. (Yeo.)

Change of life and environment, such as tent life in the woods, is beneficial in chronic cases.

Physical soporific agencies of the first importance are the hot bath, followed by friction, the hot sitz-bath, hot foot-bath, cold foot-bath, the wet pack, massage, and electricity (particularly the "head breeze,"

see Medical Electricity) If the cold pack is used, hot water bottles should be placed to the feet; some advise that the pack be removed at the end of five to twenty minutes, and the skin rubbed with a coarse towel.

Soporific Drugs of value for occasional use: Sodium bromide, gr. xv–xxx well diluted in water or milk, three hours before retiring, and again on retiring.

Chloral hydrate, gr. v–x, well diluted, by mouth, every two hours, gradually increased, if necessary to 15 to 20 grains; per rectum, gr. xv–xxx, well diluted (double the dose by mouth). It is a cardiac depressant and gastric irritant; but Price says that he has used it very extensively, and has never found it dangerous in heart disease. He says it should be avoided, however, where there is much bronchial secretion or œdema of the lungs.

Sodium bromide and chloral, aa gr. xv, per rectum; or sodium bromide, gr. xl and chloral, gr. xx, in a single dose, per rectum, well diluted.

Chloralamide, gr. xxx–lx, in capsule; not so depressant as chloral; "the safest and best" of mild hypnotics, says Allbutt.

Chloralamide and sodium bromide, aa gr. xx.

Chloretone, gr. v–xv, in water; not so depressant as chloral.

Hypnal or chloral-antipyrin, gr. xv–xxx, in aqueous solution, best per rectum; for insomnia due to pain or cough.

Sulphonal, gr. x–xx, with potassium bromide, gr. xx, in a cup of warm broth, milk, or chocolate, two to three hours before bedtime, or at bedtime, if the patient awakes in the early morning. The action of sulphonal is slow but prolonged. It should not be used habitually, because of its toxic effects.

Trional, gr. x–xxx, in hot liquid, with or without codeine, gr. ¼. It acts in ten to twenty minutes, but its action is transient. It is useful where there is difficulty in getting to sleep.

Veronal, gr. v, in a cup of weak tea or warm water, one and one-half to two hours before retiring. Never give over 5 grains, says J. Collier, and keep the bowels active.

Trional, gr. x, with veronal, gr. v, at bedtime.

Trional, gr. v–x, with sulphonal, gr. v–x, at bedtime.

Paraldehyde, ʒss–ii, in diluted brandy. It acts rapidly.

Amylene hydrate, ♏xxx–lxxx, thoroughly dissolved in warm water or milk, before retiring.

Tr. cannabis indicæ, ♏xv–xxx, in water; or Ext. cannabis indicæ, gr. ⅓–ii; for neuralgia.

Aspirin, gr. v–x–xx, with or without veronal, gr. iii, for insomnia with headache or other pain.

Alcohol: 1 to 2 tablespoonfuls of whiskey in hot water, one-half to one hour before retiring; especially useful in the aged.

Spt. ætheris nitrosi, spit. ætheris co., and spit. ammon. aromat., aa ♏xx, well diluted, as a diffusible stimulant.

Spt. chloroformi, or spt. ætheris, or spt. ætheris co., ʒi of either, with spt. camphoræ, ʒss, in a little hot whiskey, well diluted. (Osler.)

Fl. ext. ergotæ, ʒss, pot. bromid. ʒss, syr. aurantii, ʒss, aq. menth. pip., ʒiss. M. Sig.—One teaspoonful in water; for the insomnia of arteriosclerosis or neurasthenia. (Forchheimer.)

Hyoscine, gr. $\frac{1}{100}$–$\frac{1}{60}$ hypodermically for motor restlessness or insane excitement.

Morphine, gr. ⅛ to ¼; or opium; for insomnia due to pain.

Tincture of hop, ʒi–ii, in water, ʒi–ii, is often added to other hypnotics. Do not despise the hop-pillow.

Insular Sclerosis.—L. *in'sula*, island. See Multiple Sclerosis.

Intercostal Myalgia or Pleurodynia.—L. *int'er*, between + *cos'ta*, rib; Gr. πλευρά rib + ὀδύνη pain. See Myalgia.

Intercostal Neuralgia.—See Neuralgia.

Intermittent Claudication.—See Claudication, Intermittent.

Pulse.—See Arrhythmia, Cardiac.

Internal Popliteal Nerve.—See Sacral Plexus.

Interstitial Hypertrophic Progressive Neuritis of Childhood.—A very rare familial paralysis of children, characterized by hypertrophy and hardness of the peripheral nerve trunks, with secondary degeneration of the dorsal columns of the cord, progressive muscular atrophy, kyphoscoliosis, nystagmus, myosis, inequality of the pupils, and symptoms of locomotor ataxia, viz., ataxia of the four limbs, diminution of sensation, lightning pains, loss of reflexes, and Argyl-Robertson's sign (see also Atrophies, the Progressive Muscular).

The Treatment is similar to that of tabes, (*q.v.*)

Interstitial Pneumonia, Chronic.—See Pulmonary Cirrhosis.

Intestinal Atony.—L. *intestin'um*, from *intus*, within. See Constipation.

Cancer.—See Cancer of the Intestines.

Catarrh.—See Enteritis

Colic.—See Colic, Intestinal.

Intestinal Distomiasis.—See Distomiasis.

Hemorrhage.—See Hemorrhage, Intestinal.

Indigestion.—See Diarrhœa.

Inflammation.—See Enteritis.

Intestinal Intoxication.—The following classification is that of W. Langdon Brown:

1. Indolic Type, due to the bacillus coli and perhaps the bacillus putrificus, with marked indicanuria (*q.v.*, for test), seen most commonly in marasmic children with a distended abdomen and chronic intestinal indigestion.

2. Butyric Type, due chiefly to the bacillus ærogenes capsulatus, which sets free nascent hydrogen, which causes reduction of the bile pigment, with resulting excess of urobilin in the fæces and urine, so that a red color is produced on the addition to the fæces of a strong solution of mercuric chloride, the red color being intensified by throwing the treated fæces into water. The chief symptoms are: a sour smell to the patient; desquamation of the epithelium of the tongue, mouth, and digestive tract, with a resulting tendency to diarrhœa; anæmia due to toxic hæmolysis; little or no indican in the urine; perhaps only an "indefinite invalidism."

3. Combined Indolic and Butyric Type, with chiefly mental depression and muscular fatigue.

4. Carbohydrate Fever, corrected by rigid restriction of carbohydrates.

5. Sulphæmoglobinæmia, due possibly to Wallis's nitrifying bacillus, found in the saliva, which produces nitrites, the latter after absorption from the intestines, causing a reduction of oxyhæmoglobin, which with sulphuretted hydrogen then forms sulphæmoglobin (detected by means of the spectroscope). Cyanosis is the symptom of note.

6. Methæmoglobinæmia, detected by means of the spectroscope, also causes cyanosis; usually there is also diarrhœa. The habitual use of the coal-tar drugs (acetanelid, antipyrin, phenacetin, etc.), and potassium chlorate, carbon monoxide, etc., are causative.

7. Pressor diamines in the intestines causing increased blood-pressure.

Possible consequences of intestinal toxæmia, according to Watson, are neurasthenia, dyspepsia, and rheumatoid arthritis.

Treatment.—Asepsis is first to be considered: clean nose, mouth, and throat; correction of catarrh, suppuration, dental caries, pyorrhœa, etc.; the use of castile soap, toothbrush, and warm water, especially before breakfast; clean hands; clean dwelling (no dry sweeping, promiscuous spitting, etc.); clean food.

Antisepsis is next to be considered:

Calomel (Part 11), followed by a saline.

Morning salines, especially sodium sulphate in the indolic type, to provide sulphate for the formation of nontoxic ethereal sulphates (indican, etc.).

Fasting and purgation for three or four or more days, with the copious drinking of mineral waters and daily colonic lavage; later returning gradually to regular diet.

Naphthalene tetrachloride, gr. v–x, in hardened capsules, three or four times daily.

Beta-naphthol, gr. v–x, in intestinal coated pill, t.i.d.

Menthol, gr. ss–i–v, in formalin-hardened capsule, grade II of hardness, 3 to 5 times a day.

Thymol, gr. v-xv, in hardened capsule, t.i.d.

Manganese dioxide, gr. iv, in pill, t.i.d.p.c.

Hydrogen peroxide, ℥ss–i–ii, t.i.d.p.c.

Ichthyol, ♏iii–x, in hardened capsule, t.i.d.; up to ℥iss daily.

Salol, gr. viiss, in capsule, 2 to 3 times a day.

Milk soured by lactic-acid-producing bacteria; or,

Lactobacilline or Lactone (preparations of lactic bacilli: b. bulgaricus and b. paralacticus), 2 to 4 tablets, p.c., followed by a little sweetened food or water; antagonize the growth of putrefactive bacteria; indicated if the fæces are not acid; contraindicated in hyperchlorhydria, rheumatism, and abnormal carbohydrate fermentation in the bowel.

Autogenous vaccines prepared with organisms from the stools which are agglutinated or destroyed by the patient's blood.

Irrigation of the colon through an appendicostomy wound.

Correction of constipation (*q.v.*) and enteritis (*q.v.*).

In the indolic type of toxæmia, carbohydrates should be restricted, and the milk peptonized or boiled. Finely divided meat and gelatine should be given (gelatine contains no tryptophan, the precursor of indol); well-cooked rice and biscuits are allowed.

Intestinal Neuralgia.—See Enteralgia.

Intestinal Neuroses.—Motor, sensory, or secretory disturbances not associated with demonstrable anatomic change.

1. Motor: peristaltic unrest; nervous diarrhœa; atony; enterospasm; and intestinal paralysis.

2. Sensory: enteralgia.

3. Secretory: mucous colitis.

Intestinal Obstruction.—**1. Acute Obstruction.**—Acute intestinal obstruction is characterized by the sudden occurrence of severe abdominal pain, without tenderness in the beginning, without pyrexia in primary cases, associated with constipation, nausea and vomiting, and later abdominal distention, prostration, and collapse.

In intussusception, which occurs usually in infants, there are present in well-marked cases a sausage-shaped tumor and often tenesmus and bloody stools. A bloody diarrhœa may also occur in infarction of the bowel. Infectious diarrhœa is often diagnosed in infants. Never neglect a rectal digital examination.

The Prognosis is always serious.

Causes of Acute Obstruction.—Strangulation of the gut due to bands and adhesions (adherent appendix, oviduct, etc.), omphalo-mesenteric remains, mesenteric and omental slits, peritoneal pouches and openings (internal and external herniæ), pedunculated tumors, retroflexed gravid uterus, twists and knots (volvulus, involving usually the sigmoid), rarely strictures or tumors; intussusception; severe spastic contraction of the gut (enterospasm); foreign bodies (fecal masses, enteroliths, gall stones, parasites, swallowed bodies, magnesia, bismuth, etc.); congenital stenosis, usually anorectal; intestinal paralysis (a. Functional, due to abdominal, hernial, testicular, or ovarian trauma, including operations, operation for hemorrhoids, torsion of an ovarian cyst, renal or gall-stone colic, paracentesis for ascites, hemorrhage, acute pancreatitis, inflammation in the inguinal region, toxic states, *e.g.*, pleurisy, pneumonia, cholera, typhoid fever, enteritis, intestinal intoxication, uræmia, plumbism, opium poisoning, spinal or cerebral disease, *e.g.*, meningitis, myelitis, tabes, cerebral tumor, apoplexy, mania, melancholia, hysteria, hypochondriasis, heart disease; b. Organic, due to peritonitis, mesenteric embolism or thrombosis, intestinal obstruction, ulcerative enteritis, perforation of the stomach or intestine, ruptured tubal pregnancy, fatty degeneration of the muscular coat of the bowel, senile changes).

(See also Hernia; Dilatation of the Stomach, Acute; and Enterospasm. Volvulus of the omentum, appendicitis, and diverticulitis may produce the same symptoms as those of acute intestinal obstruction.)

Treatment of Acute Obstruction.—Withhold all food, and for thirst allow the patient to suck but not swallow ice, and give normal saline solution (℥i ad Oi) per rectum or subcutaneously. To lessen peristalsis, relax spasm, and relieve pain, the hypodermic administration of morphine, gr. ¼, with atropine, gr. $\frac{1}{50}$, is indicated, together with hot poultices to the abdomen (for tympanites, mustard poultices, or hot turpentine stupes, see Part 11 for all drugs). In non-operable paralytic ileus, however, is indicated the hypodermic administration of eserin or physostigmin sulphate or salicylate, gr. $\frac{1}{120}$ to $\frac{1}{64}$, t.i.d.; or better, pituitrin, 1 c.c. every hour, for, say, from three to six doses; together with copious cool saline colonic douches, with or without the addition of turpentine, or asafœtida.

Gastric lavage should be practiced every two or three hours in all cases (Kussmaul and others). It is said to have accomplished cures.

In fecal impaction, use the finger or the handle of a spoon to break up the fecal masses, employing a proctoscope, if necessary, and then inject oil and warm saline enemata, or the following: castor oil, ℥i, glycerine, ℥ii, soapsuds, Oi, which should be injected into the colon every two hours, and retained as long as possible. (Gant.)

Copious colonic injections of warm fluid are advised by some in all cases of acute obstruction, and condemned by others.

For collapse, administer cardiac stimulants and surround the patient with hot water bottles (see Shock).

Most cases of intestinal obstruction require surgical intervention, and the latter should not be delayed beyond twelve to twenty-four to forty-eight hours, when medical measures do not relieve.

In very grave cases, make a subumbilical incision in the median line under local novocaine anæsthesia (see Part 11), employing little or no general anæsthesia, draw the distended coil of intestine forward, incise the outer coats with a scalpel, insert a large trocar and cannula attached to a long rubber tube to keep the fæces away from the wound, and suture the gut to the wound. Wash out the stomach.

If the case is not so urgent, search for the obstruction, passing the hand first to the cæcum. If this is empty, the obstruction is above it. If necessary, during the search, allow the intestines to escape through the incision and protect them with hot, moist cloths. Even though the obstruction be found and corrected, it is wise to perform enterostomy above the site of the obstruction.

Reduce an intussusception, not by pulling upon the gut, but by upward compression of the enveloping bowel. After the reduc-

tion, correct any possible causal factor: excise a polypus, tumor, ulcer, or diverticulum; shorten a long mesentery by plication; fix a long colon or cæcum to the parietal peritoneum; correct a phimosis. The presence of gangrene demands resection.

If a volvulus, when untwisted, immediately recurs, fix the bowel to the abdominal wall, or shorten the mesentery, or excise the gut.

Cover denuded areas with peritoneum to prevent the formation of adhesions.

Excise strictures of the small intestine, unless the proximal segment of gut is much distended, when a lateral anastomosis should be performed. Later, if the stricture is malignant, it should be excised. In malignant stricture of the large intestine, in which the obstruction is acute, and the proximal bowel therefore weak, always perform first a colostomy; then, after three or four weeks, the diseased gut may be excised.

II. Chronic Obstruction.—Chronic intestinal obstruction is characterized by pain of insidious onset, occasional paroxysms of colic associated with visible peristaltic movements or " stiffening " of the intestine, incomplete constipation, sometimes diarrhœa, perhaps some flatulent distention. Aids to diagnosis include the bismuth or barium X-ray examination (see under Dyspepsia), a sigmoidoscopic examination (see under Enteritis, Chronic), and palpation under anæsthesia.

A chronic obstruction may, of course, become acute.

Causes of Chronic Obstruction.—Fecal impaction; intussusception; compression of the bowel by tumors, or displaced organs, particularly the uterus; diverticulitis; strictures, cicatricial or cancerous; etc. (see also Constipation, for additional causes).

Treatment of Chronic Obstruction.—Prescribe a tumbler of water one hour before meals, and a soft and liquid diet which leaves little residue, *e.g.*, buttermilk, milk, gruels, custards, eggs, tender meats, vegetable purées, baked or stewed fruit, an orange for breakfast, etc. Four or five small meals a day may be given. Employ enemata when required. For pain employ opium and belladonna. Operate if feasible (see Constipation, for further information). Chronic diverticulitis resembles and is treated like operable carcinoma.

Intestinal Paralysis.—See Intestinal Obstruction.

Spasm.—See Enterospasm.

Intestinal Stasis.—Gr. στάσις halt. See Constipation, and Intestinal Obstruction, Chronic.

Toxæmia.—See Intestinal Intoxication.

Ulceration.—See Enteritis, Chronic.

Worms.—See Worms.

Intracranial Hemorrhage in the New-Born.—See Hemorrhage, Intracranial.

Intravenous Medication.—The apparatus required includes a rubber-tube tourniquet, pressure forceps to hold the tourniquet in place, a round cambric needle, a Schreiber sharp-pointed needle or an ordinary steel aspirating needle, with rubber tubing and clamp and glass funnel for administering infusions, or a 2-10 c.c. all-glass syringe with steel needle (not too sharply bevelled) for intravenous injections (keep needles oiled when not in use), cocaine solution, 0.1 per cent., hypodermic syringe, alcohol, ether, or tincture of iodine for disinfecting the skin, glass beaker or cup for dissolving the drug, distilled or filtered boiled water as a solvent.

For intravenous infusion the rubber tubing is attached to the glass funnel, filled with sterile normal saline solution (0.8 per cent.), and clamped. The median basilic or cephalic vein at the bend of the elbow is usually selected. After applying the stretched tourniquet to the upper arm to distend the veins (to increase the distention have the patient open and close the fist several times), and swabbing the skin with tincture of iodine, one may transfix the vein with a round cambric needle, under cocaine anæsthesia (see Part 11), if necessary, and lifting the vein up, insert the Schreiber or other needle into its lumen, just below the cambric needle. The aid of the cambric needle, however, may usually be dispensed with, and the vein steadied with the left thumb applied below the point of insertion of the needle and making slight traction downward on the skin. The latter should be held, bevel up, nearly parallel with the surface of the skin. T. E. Wright inserts the needle through the skin alongside the vein, then plunges the needle into the vein.

When blood flows from the needle, remove the tourniquet, and after allowing the saline solution to displace all bubbles from the rubber tube, connect the latter with the needle, elevate the glass funnel, and pour in the medicinal solution. Remove the needle from the vein before the glass funnel is empty; or a glass tube may be interposed in the course of the rubber tubing so that it may be seen when to remove the needle so as to avoid the entrance of air into the vein.

Cease the infusion if pain or œdema occurs

at the site of puncture, which indicates that the fluid is entering the tissues instead of the vein. In such an event resort to massage at once to avert irritation.

For intravenous injection a Schreiber or other suitable all glass syringe may be used. After the operation, cleanse syringe and needle with cold water, dry by air, and inject the needle, if of steel, with liquid vaseline.

Intubation.—L. *in*, into, + *túba*, tube. See under Diphtheria.

Intussusception.—L. *íntus*, within + *suscipére*, to receive. See Intestinal Obstruction.

Iodism.—See Part 11.

Ionic Medication.—See under Inflammation.

Irritable Heart.—See Arrhythmia, Heart Strain, Palpitation, and Neurasthenia.)

Ischiorectal Abscess.—Gr. *ἰσχίον* hip + L. *rectum*, straight. Characterized by pyrexia and a tender painful swelling beside the anus. See Proctitis for the causes.

Treatment.—Make a four to six inch incision parallel with the median line, open up all pockets with the finger, irrigate thoroughly with hot normal saline (℥i ad Oi) or boric acid solution (℥ii ad Oi), and drain with deep rubber tubes and light gauze packing. Change the dressings once or twice a day or less often, as required to keep the parts dry.

Ischuria.—See Anuria.

Itching.—See Part 5, Skin Diseases.

Japanese River Fever.—An acute disease, with a mortality of 15 to 70 per cent., endemic along certain rivers in the west of the Japanese island of Hondo, and characterized by the occurrence of chills, headache and prostration, followed on the second day by pain and tenderness in the lymphatic glands, and nearby small spots of skin necrosis, fever, conjunctivitis, and an enlarged spleen, followed on the sixth or seventh day by large irregular, dark-red papules, beginning on the face and spreading to the forearms, legs, and trunk, and lasting from four to seven days.

Treatment.—This is symptomatic. As a preventive measure, insect bites should be guarded against.

Jaundice.—Slight jaundice is best detected by inspection of the conjunctivæ, by the occurrence of yellowish froth on shaking the urine, and by the following tests (excepting acholuric jaundice described below):

(a) Rosenbach's Modification of Gmelin's Test.—Acidify a large quantity of urine with hydrochloric acid, and filter several times through a thick filter-paper. The latter will hold back the bile-stained elements of the urine. Dry the filter-paper and its contents by pressing with another filter-paper. Now drop upon it a drop of yellow nitric acid. Rings will appear in the presence of bile showing a play of colors from green, through blue, violet and red to yellow. Says Webster: "It is sometimes advisable to add a little milk of lime to the urine before filtering, instead of the hydrochloric acid, as this will throw down the phosphates which will carry with them the biliary pigment."

(b) Smith's Test.—Superimpose upon the urine (acidified if necessary with acetic acid) in a test-tube a 1 per cent. alcoholic solution of iodine. The presence of bile pigment is revealed by the appearance of an emerald-green color at the zone of contact.

The presence of bile-pigment in the blood tends to produce the following changes, viz., delayed coagulation of the blood (over four and a half minutes; see under Blood Examination), and proneness to hemorrhage, bradycardia, sleepiness, headache, mental depression, pruritis, etc. In obstructive jaundice the stools are fatty and clay-colored.

Causes of Jaundice.—A. Obstructive Jaundice.—Gall-stones or parasites within the common or hepatic ducts; pancreatic stone in the diverticulum of Vater; inflammatory tumefaction of the ducts (see Jaundice, Catarrhal); cicatricial stenosis; neoplastic stenosis (cancer of liver, gall-bladder, bile-ducts, glands, pancreas); compression from without by tumors of the liver, gall-bladder, pancreas, stomach, intestine, kidney, omentum, mesentery, retroperitoneum, or pelvic organs; compression by enlarged glands in the fissures of the liver (leukæmia, Hodgkin's disease, etc.); by a stone in the cystic duct, causing thickening; by adhesions; fecal accumulations; aneurysm of the aorta, hepatic, or mesenteric arteries; by the pregnant uterus; splanchnoptosis; hepatic abscess, gumma, or tubercle; hepatic distomiasis; hepatic congestion; suppurative cholangitis; cirrhosis of the liver, especially the hypertrophic form (obstructive ?); pancreatitis and cirrhosis of the pancreas; portal thrombosis; icterus neonatorum due to congenital obliteration of the biliary ducts or congenital syphilic hepatitis.

B. Toxæmic and Hæmolytic Jaundice.—Infections (septico-pyæmia, syphilis, malaria, yellow fever, relapsing fever, Rocky Mountain spotted fever, typhoid fever, typhus fever, scarlet fever, diphtheria, pneumonia, Weil's disease or infectious or epidemic jaundice (*q.v.*); acute yellow atrophy of the liver; pernicious anæmia; splenic anæmia; paroxysmal hæmoglobinuria; poi-

sons (ptomaines, mushrooms, snake venom, phosphorus, arsenic, arseniuretted hydrogen, male fern, chloroform, pyrogallol, toluylendiamin, tetrachlorethane in airplane workers, coal tar products, etc.); emotional depression (?); icterus neonatorum (physiological and mild, or severe and due to sepsis or thrombophlebitis of the umbilical veins, or epidemic hæmoglobinuria without sepsis of the umbilical vessels, or morbus maculosus neonatorum—hemorrhagic purpura); and finally acholuric jaundice, either congenital and familial or acquired, non-fatal, and characterized by chronic or intermittent jaundice, absence of bile in the urine, splenomegaly, anæmia, debility, and increased fragility of the red blood-corpuscles (see under Blood Examination for test; the treatment is splenectomy, which is apparently curative).

In obstructive jaundice the fragility of the erythrocytes is diminished, while in hæmolytic jaundice it is increased.

Jaundice, Catarrhal.—Catarrhal jaundice is the result of inflammatory tumefaction of the duodenal portion of the common duct due to gastro-duodenal catarrh. The latter may be caused by dietary indiscretions, alcohol, emotional disturbances, exposure to cold, malaria, infectious fevers, or passive congestion due to portal obstruction, heart or kidney disease.

The symptoms are jaundice, usually without pain, clay-colored stools (indicative of biliary obstruction), and dyspepsia or biliousness, occurring usually in the young. Recovery occurs in from two to eight weeks or longer, but recurrences may follow.

Treatment.—First open the bowels by means of calomel, gr. ii–v, in one dose, or gr. ss every hour for six doses (children according to age; see Part 11) followed by a saline; and continue the saline as required to produce one or two stools a day, until the jaundice begins to abate, as shown by the stools. Sodium phosphate or sulphate, for instance, one tablespoonful, more or less, may be given, dissolved in hot water, one hour before breakfast; or a teaspoonful may be given on an empty stomach two to four times a day. Strong purgatives, however, should be avoided. One hour before each meal the patient should drink a glass of Vichy or of warm water containing ten grains of sodium bicarbonate.

The diet should be restricted, and fats and saccharine foods excluded. For the first few days allow only warm skimmed milk diluted with an equal amount of lime water; Vichy, or Apollinaris, or plain water with the addition of ten grains of sodium bicarbonate to each glassful of milk and water, also thin arrowroot gruel, barley water and egg albumen flavored with lemon, broths, gelatine preparations, and diluted buttermilk. Later there may be added consommé thickened with a cereal, milk toast, dry toast, zwieback, and later, well-cooked gruels, eggs boiled three minutes, green vegetables, non-fatty fish, chicken, chops, fruit, etc. Only plain bland food should be allowed, even after recovery.

Yeo advises the application of hot linseed or mustard (Part 11) poultices over the liver and epigastrium. If desired, one may inject into the colon daily one or two quarts of cool water, with the object of stimulating peristalsis and thus favoring drainage from the common duct.

For persistent vomiting employ gastric lavage with a hot solution of sodium bicarbonate, one tablespoonful to the quart (see under Dyspepsia for technique), or the drinking of hot soda water in large amounts, and apply heat to the epigastrium (see also Vomiting).

For excessive flatulence, see Tympanites.

For troublesome pruritus are recommended the following:

Carbolic acid, ℥ss–ii to the pint of water, as a wash.

Menthol in alcohol, gr. v–xv ad ℥i.

Menthol and talcum powder, gr. xxv ad ℥i.

Camphor and talcum powder, ℥i ad ℥i.

Menthol, gr. xxx; camphor, gr. xxx, olive oil, ℥iss; lanolin, ℥iss.

Bromocoll ointment, 20 per cent.

Anæsthesin, ℥iiss; lanolin and vaseline, aa℥iss. The two latter are the best, says Ortner.

Alcohol rubs: lukewarm alkaline baths; or cold sponging.

Bromide, chloral, paraldehyde, etc., per rectum, in severe cases (see Part 11 for drugs).

Thyroid extract, gr. v, 2 to 3 times daily (diminishes the production of bile salts; the best, says W. Langdon Brown).

Croftan says: "Only two drugs can be definitely credited with the power to stimulate an increased flow of bile, viz., preparations of salicylic acid and of bile acids." Salicylic acid dilutes the bile and is a biliary antiseptic. These drugs may be given, he says, "in small doses only."

℞ Sodii salicylatis.... ℥i–ii (gr. viiss–xv per dose)
Aquæ..... ℥iv

M. Sig.—One tablespoonful in water, by mouth or rectum, several times daily. (Ortner).

℞ Sodii glycocholatis vel fellis bovis purificati..... (gr. v per dose)
Pulveris rhei compositæ, aa ʒi (gr. v per dose)
M. et fiant capsulæ No. 12.
Sig.—One or two capsules, t.i.d. (Ortner.)

Forchheimer gave purified ox-gall, gr. v, after meals, in chronic cases, for the purpose of aiding in the absorption of fats, increasing peristalsis, and acting as an antiseptic.

As the jaundice begins to subside, one may prescribe the following:

℞ Acidi nitrohydrochlorici diluti..... ♏x–xx
Tincturæ nucis vomicæ..... ♏x–xv
Infusi calumbæ, q.s., ad..... ʒi
M. Sig.—One ounce in water, one hour before meals.

If the jaundice persists in spite of medical treatment, open the abdomen, explore for gall-stones, stricture, etc., and drain the biliary ducts by means of a cholecystostomy.

Jaundice, Infectious.—(Epidemic Jaundice; Weil's Disease). One type of epidemic jaundice is due to a spirochæta transmitted probably by the rat (spirochetosis icterohæmorrhagica), and a second type is caused by a bacillus related to the paratyphoid group, occurring in decomposed meat or cheese, etc. The disease usually begins suddenly with headache, backache, muscular pains, hyperæmia conjunctivæ (in spirochetal cases), nausea and vomiting, chills and fever; and jaundice usually appears on about the second or fourth day. Colic and diarrhœa may occur, but rarely. The liver is often enlarged and tender, and the spleen is also somewhat enlarged in bacillary cases. There is a tendency to hemorrhages, albuminuria, and nephritis in spirochetal cases. In spirochetosis the temperature drops on the appearance of jaundice, but five or six days later a second rise occurs lasting six or seven days, and a long convalescence follows. Bacillary cases are milder, jaundice is not marked and the urine is apt to be normal.

The diagnosis of spirochetosis is established by the intraperitoneal inoculation, in a guinea pig, of 3 to 5 c.c. of the patient's blood obtained on or before the appearance of jaundice; the blood is rarely infective after the seventh day. If the test is positive, the guinea pig, after an incubation period of six to twelve days, develops jaundice and dies. The sediment of the centrifuged urine contains spirochætæ after the tenth day.

Treatment.—This is symptomatic. Put the patient to bed on liquid diet. Calomel in small doses (see Part 11) followed by a saline may be advisable, but drastic purgation should be avoided. For the toxæmia prescribe copious water drinking, normal saline (ʒi ad Oi) enemata, and hypodermoclysis. Employ hydrotherapy for high fever (see Fever). After the fever has subsided, return gradually to full diet. The treatment is, in general, that of catarrhal jaundice (*q.v.*).

Jaundice, Splenomegalic.—See under Jaundice.

Joint Affections.—See Arthritis, in Part 10, Orthopædics.

Kakke.—See Beri-beri.

Kala-Azar, Indian (Native "Black Fever"; Tropical Febrile Splenomegaly; Dum-Dum Fever).—A common tropical and subtropical infectious disease of Asia, caused by the Leishman-Donovan protozoon, and characterized by a chronic, irregularly remittent fever, anæmia of the secondary type (see Blood Examination), leucopenia, dark skin, enlargement of the liver, marked splenomegaly, and emaciation, terminating after several months or years in death, rarely in gradual recovery. The Leishman-Donovan body is a small oval, round, or oat-shaped body, 2½ to 3 microns in diameter, containing a nucleus and a bacillus-shaped nucleolus. It may be found in the peripheral blood, the fluid from an artificial blister, a lymphatic (post-cervical) gland, or the granulation tissue taken from an ulcer. It is usually intracellular. When cultivated in the bedbug or in citrated blood, best at a temperature of 68° to 70° F., it enlarges, becomes pyriform and acquires a flagellum. It multiplies by longitudinal fissure. It is probably transmitted by some bug, possibly the bedbug, pediculus, etc. The incubation period is about ten days.

Treatment.—Quarantine the patient and infected localities, and sterilize the latter by means of sulphur fumigations, boiling of the clothing, etc. (see Disinfection), or by burning the houses. Exclude dogs.

Sustain the patient's strength by means of a concentrated diet, fresh air, etc., and keep the bowels regular.

One may try the intramuscular injection of quinine bihydrochloride, gr. xv, dissolved in water. Large doses are usually given by mouth, gradually increasing to even ʒi–iss daily, this dose being continued for weeks or months, or until the fever has been reduced to the low continued or intermittent type, when the dose is decreased to about 20 grs. a day. But Manson does not sanction these tremendous doses of quinine. Atoxyl, gr. iii every three days for a year is recommended; also salvarsan. Intravenous injections (*q.v.*),

at four-day intervals, of a 2 per cent. solution of antimony tartrate, beginning with 4 c.c. and increasing the dose by, say, 2 c.c., until, say, 10 c.c. is reached, may result in cure.

Kala Azar, Infantile.—See Ponos.

Katayama Disease.—See Distomiasis.

Kidney Abscess.—See Pyelonephritis.

Kidney, Angioneurosis of the.—See under Hæmaturia.

Calculus.—See Nephrolithiasis.

Cancer.—See Tumors of the Kidney, in Part 3, Genito-Urinary Diseases.

Cysts.—See Part 3, Genito-Urinary Diseases, Tumors of the Kidney.

Floating.—See Splanchnoptosis.

Hemorrhage.—See Hæmaturia.

Hypernephroma.—Gr. *ὑπέρ* over + *νεφρός* kidney + *-ωμα* tumor. See Tumors of the Kidney, in Part 3 Genito-Urinary Diseases.

Inflammation.—See Bright's Disease, and Pyelonephritis.

Injuries.—See in Part 3, Genito-Urinary Diseases.

Movable.—See Splanchnoptosis.

Neuralgia of the.—See under Hæmaturia.

Polycystic.—Gr. *πολύς* many + *κύστις* cyst. See Tumors of the Kidney.

Sarcoma.—Gr. *σάρξ* flesh + *-ωμα* tumor. See Tumors of the Kidney, in Part 3, Genito-Urinary Diseases.

Stone.—See Nephrolithiasis.

Tuberculosis.—See Pyelonephritis.

Tumors.—See Tumors of the Kidney, in Part 3, Genito-Urinary Diseases.

Korsakow's Psychosis.—See Alcoholism, and Neuritis, Multiple.

Kubisagari.—A non-fatal endemic disease of parts of Japan, Switzerland, and France, occurring only during the warm season, and characterized by attacks of vertigo, diplopia, dimness of vision, paresis of numerous muscles, and depression, lasting from a few minutes to several hours, and sometimes occurring several times a day.

Treatment.—Rest in bed on full diet is advised. Nakano prescribes a saline, followed by quinine, gr. viiss, powdered opium, gr. ss, and a hypodermic of camphor, gr. ii, in olive oil, ♏xv. Gerlier prescribes potassium iodide in small doses; Miura, potassium iodide and arsenic. See Part 11 for drugs.

In the intervals between attacks, employ general faradization and massage.

Lachrymal Glands.—L. *la'crima*, tear. See Part 6, Eye Diseases.

La Grippe.—See Influenza.

Landry's Acute Ascending Paralysis.—A rare, usually rapidly fatal disease, no doubt of bacterial origin, characterized by a rapidly ascending flaccid paralysis, beginning in the legs, and spreading upward to the trunk, arms, neck, and respiratory muscles, not associated with anæsthesia, muscular atrophy, electrical changes (at least for several weeks), or sphincter disturbances. Death is due to respiratory paralysis or bronchitis and pneumonia. If recovery occurs, it is usually complete. Microscopic cord changes can be detected only by special staining methods.

Diagnosis.—In acute ascending myelitis there are sensory paralysis, sphincter disturbances, and fever. In acute toxic polyneuritis, atrophy and electrical changes appear early, and sensory paralysis is present. In acute poliomyelitis, the constitutional symptoms, fever, etc., are marked, and the disease is epidemic.

Treatment.—Purge the patient with castor oil, or calomel (Part 11). Keep the head slightly raised, and change the posture of the patient frequently for comfort. Observe strict cleanliness as directed under Bed-Sore. Employ daily passive movements of the joints to prevent adhesions. Resort to massage and electricity only after the acute stage has passed.—See Poliomyelitis, Acute.

Laryngeal Obstruction.—See Part 9.

Laryngismus Stridulus.—See Part 9, Throat Diseases.

Laryngitis.—See Part 9, Throat Diseases.

Spasmodic.—See Part 9.

Lateral Sclerosis Amyotrophic.—See Atrophies, the Progressive Muscular.

Lathyrism.—Poisoning by the chick-pea (*Lath'yrus cicéra*), or by lupines (lupinosis). See Combined System Diseases. It is said, however, that lathyrism occurs only when vetch is eaten in excess and not as a part of a mixed dietary.

Lead Poisoning; Plumbism; Saturnism.—L. *plum'bum*, lead; L. *satur'nus*, lead. **I. Acute Poisoning.**—See under Poisoning.

II. Chronic Poisoning.—At first, for several weeks or longer, there are usually ill-defined gastro-intestinal disturbances, anorexia, constipation (spastic), headache, perhaps general pains, depression, restlessness, insomnia, and weakness. After a variable period, colic, anæmia, and tremor appear, sometimes paralysis (acute neuritis, with wrist-drop, etc.); the skin assumes an earthy pallor, and the patient becomes emaciated. Convulsions, delirium, mania, melancholia, coma, or other encephalopathies may supervene. Sometimes symptoms resembling those of acute poliomyelitis or locomotor ataxia occur. The blood-pressure is raised.

The anæmia is of the secondary type (see under Blood Examination). It is characterized particularly by basophilic degenerations of the red cells and polychromatophilia.

The gray or black (so-called blue) line (lead sulphide) situated about one millimetre from the free margin of the gum, and appearing as a dotted line under a hand lens, is almost pathognomonic. It may, however, persist for years after all symptoms of plumbism have disappeared. A similar line occurs in bismuth poisoning.

Examine the urine for lead, although a negative result means nothing. Heat 500 c.c. of urine with 50 c.c. of hydrochloric acid and 2 or 3 grams of potassium chlorate; drive off the chlorine and concentrate the solution by evaporation; then pass hydrogen sulphide gas through the solution from a generator in order to precipitate black lead sulphide.

Prognosis.—This is good, except in severe protracted paralysis, and in cerebral complications. Chronic interstitial nephritis and arteriosclerosis are common sequelæ.

Treatment.—Purge the patient freely by the administration, each morning, one hour before breakfast, of sodium or magnesium sulphate, or Rochelle salt (Part 11), aided, if necessary, by large saline or oil enemata. The sulphate salts form with lead the insoluble lead sulphate. At the same time administer atropine, gr. $\frac{1}{200}$, t.i.d., or tr. belladonnæ, ℥v, t.i.d., as an antispasmodic. To promote further the elimination of the poison, enjoin copious water drinking, preferably the diuretic cream of Tartar lemonade (*q.v.*); and also hot sulphur baths (sod. sulphide, 2 oz., sod. chloride, 2 oz., and sod. bicarb., 1 oz., to 50 to 60 gallons of hot water). For colic employ hot abdominal applications, and atropine; avoid morphine, if possible, since it interferes with the elimination of the lead.

After the patient has been freely purged, prescribe potassium iodide, gr. iii–v, well diluted, t.i.d.p.c., as an eliminant. Give no more than five grains, for fear of suddenly washing a large amount of lead into the circulation. For this reason the iodide is not advised in cases with acute symptoms.

In acute cerebral cases, venesection and hypodermoclysis may be useful. For delirium and convulsions, give bromides in large doses, together with chloral (Part 11).

Fresh air day and night and a generous diet are important adjuvants. Prescribe iron for anæmia (*q.v.*), and bitter tonics for anorexia (*q.v.*).

Treat paralysis only after the acute symptoms have subsided. Then employ massage, the constant current, graduated passive and eventually active exercises, and strychnine in ascending doses until muscular twitching occurs (see Part II).

Prophylaxis.—Effective preventive measures are as follows: absolute cleanliness of the skin; the wearing of gloves; the prevention of dust inhalation by means of respirators, hoods, and exhaust fan, the wet grinding of lead colors, and the proper fritting of pottery glaze, etc.; the free use of olive oil and protein food, *e.g.*, milk, before beginning work or at mid-day (the protein forms with lead an insoluble albuminate and also saturates the gastric hydrochloric acid, thus preventing the formation of lead chloride); the abolition of lead water-pipes, or the introduction into the reservoir, when the pipes are first put in, of silica or calcium carbonate, two grains to the gallon, to form a coating on the lead, or allowing the water to run some time before using. Alcohol should also be avoided.

Leg Pain.—See Pain.

Leishmaniasis.—Constitutional, see Kala Azar; Cutaneous, see Oriental Sore.

Lenticular Degeneration, Progressive.—See Chorea, Tetanoid.

Leontiasis Ossea.—Gr. λέων lion; L. *os*, bone. A very rare, diffuse, or nodular hyperostosis of the bones of the cranium and face, beginning usually in childhood, and terminating, after about twenty or thirty years, in death from brain and nerve compression. As the bones increase in size, the foramina and cranial cavity become narrowed, with resulting compression symptoms, viz., headache, neuralgia, facial paralysis, deafness, blindness, exophthalmos, mental apathy, mental disturbance, paralysis of the extremities, convulsions, paralysis of the muscles of chewing, swallowing and breathing, and finally death.

The disease derives its name from the leonine aspect imparted to the face.

Treatment.—If antiluetic treatment fails (see Syphilis), chisel away the tumor masses that are causing symptoms. No recurrence follows this removal.

Leprosy.—L. *lep'ra*. See Part 5, on Skin Diseases.

Lethargic Encephalitis.—See Encephalitis Acuto.

Leucocytosis.—Gr. λευκός white + κύτος cell. A leucocytosis is chiefly a polymorphonuclear neutrophiliosis. The normal average number of polynuclear neutrophiles per cmm. of blood is 5000 to 7000. The normal ratio to other white cells is 65 to 75 per cent.

Causes.—Digestion (10,000 to 15,000 cells, beginning about one hour after eating, and reaching a maximum in three to five hours); sometimes pregnancy (about 15,000 cells per cmm.); new-born (15,000 to 20,000 +), massage; brief cold bath; prolonged hot bath; muscular exertion, including parturition; cyanosis; Bier's passive hyperæmia; shock, physical or mental; hemorrhage; inflammation or infection (10,000 to 50,000 cells), excepting uncomplicated measles, German measles, mumps, influenza, malaria, typhoid fever, typhus fever, tuberculosis, and smallpox prior to the pustular stage; various toxæmias, *e.g.*, uræmia, hepatic toxæmia, diabetic coma, rickets, and carbon monoxide poisoning; injection of various toxins, *e.g.*, tuberculin, vaccines, peptone, pus, organ extracts, etc.; certain drugs, *e.g.*, tonics, etherial oils, myrrh, turpentine, camphor, peppermint, quinine, chloroform, ether, tissue extracts containing nucleins and nucleinic acid; apoplexy; cachexia; impending death. A leucocyte count of over 7000 is sometimes normal to the individual.

For the causes of an increase in the other white blood-cells, see Eosinophilia, Lymphocytosis, and Mast Cell Leucocytosis.

Leucocytosis, Mast Cell.—See Mast Cell Leucocytosis.

Leucopenia.—Gr. λευκός white + πένης poor. A reduction in the leucocyte count below 5000 cells per cmm.

Causes.—Typhoid fever, when limited to the intestinal canal; tuberculous lymphadenitis; starvation and malnutrition; chronic poisoning with morphine, cocaine, alcohol, and the heavy metals; measles, following the eruption; uncomplicated influenza; pernicious anæmia; splenic anæmia.

Leukæmia.—Gr. λευκός white + αἷμα blood. A rare, fatal disease of unknown etiology, affecting the leucoblastic portion of the hæmatopoietic system (bone marrow, spleen and lymph glands), and characterized by hyperplasia of the leucoblastic tissues, and the accumulation of leucocytes in the blood. If the marrow and spleen are predominantly affected, the long bones and sternum show tenderness on pressure, the spleen is considerably enlarged, and numerous myelocytes are found in the blood (splenomyelogenous or myeloid leukæmia or myelæmia). If the lymph glands are chiefly affected, they become enlarged, and numerous lymphocytes appear in the blood (lymphoid or lymphatic leukæmia or lymphemia). See Blood Examination.

Myeloid leukæmia (the commoner and milder form), may be acute or chronic, rarely the former. There occur progressive enlargement of the spleen, gastro-intestinal disturbances (nausea, vomiting, diarrhœa), pyrexia, gradual loss of weight and strength,

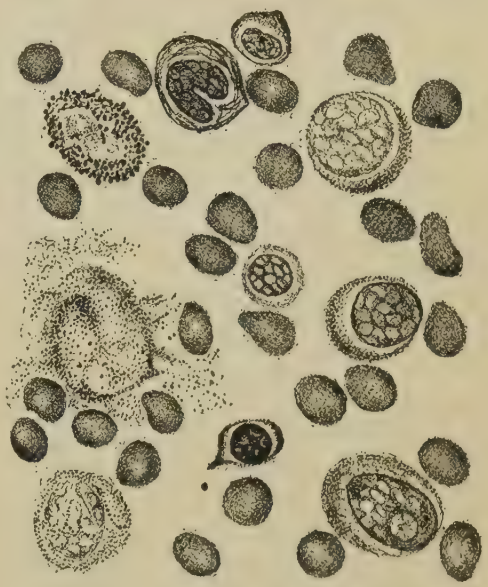


Fig. 41.—Blood picture in splenomyelogenous leukæmia.

tendency to hemorrhages and to anæmia; and the blood shows a marked increase of all the leucocytes, numerous large myelocytes of all types (neutrophile, eosinophile, and baso-

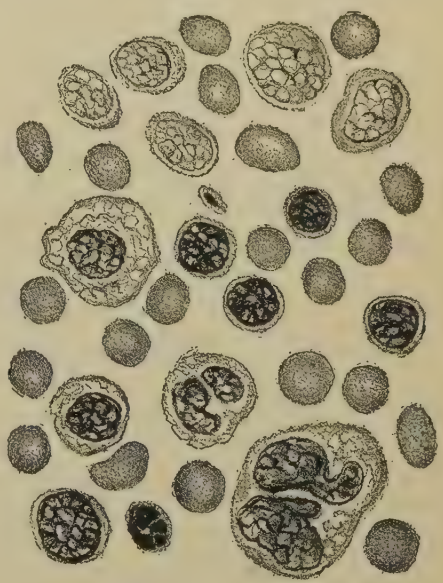


Fig. 42.—Blood picture in lymphatic leukæmia.

phile), a reduction in the number of red blood-cells and inhæmoglobin, basophilic granulations and polychromatophilia in the red-cells, and normoblasts and megaloblasts.

Lymphoid leukæmia may also be acute or chronic. In acute cases there occur sore throat, fever, hemorrhages, extreme anæmia, with perhaps little or no enlargement of the lymph glands, and the disease may resemble typhoid or typhus fever, tuberculosis, purpura, or septicæmia; but the blood picture reveals the diagnosis. Death occurs in from four to ten weeks. In chronic lymphoid leukæmia, moderate glandular and splenic enlargement occur, followed by anæmia, and the blood shows a great increase in lymphocytes with reduction in the other white cells, reduction of red cells and hæmoglobin, rarely nucleated reds except in severe cases. (For other causes of lymphocytosis, see Lymphocytosis.)

Mixed types of leukæmia occur.

Chloroma designates a rare fatal affection, characterized by the occurrence of "greenish, subperiosteal, lymphoid masses and the blood picture of lymphatic leukæmia." (A. E. Stansfeld.)

Prognosis.—Acute leukæmia is fatal within about four to ten weeks. Chronic leukæmia is fatal usually within from one to three or five years. Occasional remissions may occur, either spontaneously or as a result of the action of arsenic, quinine, the X-rays, or an intercurrent infection.

Treatment.—Enjoin fresh air day and night, a nutritious diet, and mental calm. Treat symptoms as described under their respective captions. Arsenic, as administered in pernicious anæmia (*q.v.*), and quinine, gr. v–xv, in capsule, t.i.d., are recommended. The elixir ferri, quininæ, et strychninæ phosphati, ʒi, well diluted, p.c., is a useful tonic.

Croftan advises that a search be made for a possible intestinal parasite. Naphthalene tetrachloride, gr. vii, in capsule, every three hours at first, and later every two hours, produced marked temporary improvement in a case of acute myelogenous leukæmia (Drysdale; Stansfeld). Thymol (see Ankylostomiasis) may be tried. Benzol may be tried as a possible curative.

℞ Benzol (C.P.) ..... gr. viiss
Olei olivæ ..... ♏viii
Mitte talis capsulæ (keratin coated or gelatine hardened with formalin) No. 20.
Sig.—Two capsules (or one) twice daily after meals, gradually increased up to six or ten capsules a day. (A. E. Stansfeld.)

While administering benzol, watch closely for symptoms of poisoning, *e.g.*, albuminuria, hæmaturia, giddiness, headache, abdominal pain, vomiting, diarrhœa, purpura, anæmia, leucopenia. Keep close tab on the blood and urine, and stop the drug when the leucocytes fall to 12,000 (some say to 20,000 to 25,000), as a further drop is to be expected.

Symptomatic improvement follows the use of the X-ray (*q.v.*). The spleen, lymphatic glands, epiphyses of the long bones, sternum, and liver may be irradiated at first twice a week for about six weeks, changing the areas treated as frequently as possible; then, after a rest of two or three weeks, regular doses should be continued every four to six weeks. Do not irradiate the entire spleen in one sitting, but an area about twice the size of a silver dollar once daily.

Cabot says, "Results begin to appear usually within a few weeks, and should be very marked within two months." Make frequent blood examinations while using the X-rays, and stop treatment if the red blood-cells and their hæmoglobin content diminish. Remember that too small doses may overstimulate the hæmotopoietic tissues, while overdosage may prove fatal by destroying these tissues. Intermission in the treatment is followed after several weeks or months by recurrence of symptoms.

J. Citron looks rather askance at these leucocyte-destroying measures, as probably altogether irrational. What we need, he declares, is etiologic therapy.

Osler says: "Excision of the leukæmic spleen has been performed 43 times, with 5 recoveries (J. C. Warren)." Says Stansfeld, it is an "unjustifiable and fatal operation in leukæmia." The Mayos have been reducing the size of the spleen with radium (*q.v.*) until the leucocyte count is about 30,000, followed by removal of the spleen, with excellent results.

Leucoplakia Buccalis.—Gr. λευκός white + πλάξ plate; L. *bucca*, cheek.—See Part 5, Skin Diseases.

Lice.—See Part 5, Skin Diseases.

Lids, Œdema of the.—See Part 5, Skin Diseases.

Lingual Diseases.—L. *ling'ua*, tongue. See Tongue Diseases.

Lingual Tumors and Cysts.—**Varieties.**—Mucous cyst, dermoid cyst, echinococcus cyst, papilloma, carcinoma, sarcoma, tubercle, gumma, chondroma, osteoma, fibroma, lipoma, angioma, adenoma, lingual goitre.

Mucous cysts are thin-walled and fluctuate. Dermoid cysts occur between the geniohyoglossi muscles above the mylohyoid, and cause bulging in the floor of the mouth and beneath the lower jaw. They are not translucent and do not fluctuate, as is the case with ranula. Papillomata are warty or cauliflower-like.

Treatment—As much as possible of the wall of a mucous cyst should be excised, and the remainder cauterized.

Dermoid cysts should be excised either through the mouth or from beneath the lower jaw. They are almost always attached to the periosteum of the lower jaw or the hyoid bone or both.

Malignant growths should be removed early.

Linitis Plastica.—Gr. λίνον fabric; πλαστός formed matter. See Cirrhosis of the Stomach.

Lipomatosis.—Gr. λίπος fat + -ωμα tumor. See Obesity.

Lipuria.—Gr. λίπος fat + οὖρον urine. Fat in the urine is demonstrated by the presence of strongly refractile globules which are stained black by osmic acid and red by Sudan III.

Causes.—Excessive fat diet; bony fracture; phosphorus poisoning producing fatty degeneration; fatty tumors; chyluria (*q.v.*); prolonged suppuration, as in phthisis and pyemia; diabetes mellitus; chronic nephritis; chronic heart disease; eclampsia; various affections of the pancreas and liver; pyonephrosis.

Little's Disease.—See Spastic Paralysis of Infants.

Liver Abscess.—The characteristic symptoms of suppurative hepatitis are local pain and tenderness, often pain referred to the right shoulder, enlargement of the liver, chills, irregular fever, sweats, leucocytosis, perhaps some jaundice, or a pale, muddy, icteroid complexion, and emaciation. The affection may, however, be entirely latent.

Etiology.—Amœbic dysentery; traumatism; adjacent disease, viz., suppurative cholecystitis, nephritic or perinephritic abscess, empyema, pulmonary abscess, gastric or duodenal ulcer, or ulcerating gastric cancer; suppurative pylephlebitis secondary to appendicitis, gastric or duodenal ulcer, intestinal ulcers, hemorrhoids, infective thrombosis following intestinal or anal operations, pelvic abscess, suppuration of the mesenteric glands, splenic abscess, or acute pancreatitis; suppurative cholangitis (*q.v.*); infected hydatid cyst; septico-pyæmia (*q.v.*).

Treatment.—This is surgical. See Dysentery, Amœbic, for the treatment of single or tropical abscess.

Liver, Active Congestion of the.—The symptoms in extreme cases are those of biliousness, viz., anorexia, furred tongue, offensive breath, bad taste in the mouth, constipation, general malaise, headache, mental depression, sallowness, perhaps a slight icteroid complexion, sense of fulness or distress in the epigastric and right hypochondriac regions, perhaps slight enlargement and tenderness of the liver, perhaps nausea or vomiting.

Etiology.—Excessive eating and drinking; spicy food; alcohol; sedentary habits; obesity; suspension of the menses, or of a hemorrhoidal flow; intestinal intoxication; malaria; fevers; arsenic, phosphorus, and other mineral poisons; cirrhosis in its early stage; hepatitis.

Treatment.—Attend to the cause. Purge freely with calomel, gr. ii–v, in divided doses, followed by a saline. Give alkaline waters freely, such as Vichy or Apollinaris, or sodium bicarbonate, gr. x–xv to the tumblerful. Apply leeches or cold compresses over the liver.

℞ Ammonii chloridi,
Sodii bicarbonatis, aa..... ʒiiʒii (gr. xx of each per dose)
Aquæ, q.s., ad..... ʒviii
M. Sig.—Two tablespoonfuls t.i.d.p.c., in the acute congestive stage.

℞ Acidi nitrohydrochlorici diluti ♏x–xx
Tincturæ nucis vomicæ..... ♏x–xv
Infusi calumbæ, q.s., ad..... ʒi
M. Sig.—One ounce well diluted in water, one hour before meals, in the convalescent stage.

Liver Atrophy, Acute Yellow.—See Atrophy, Acute Yellow, of the Liver.

Cancer.—See Cancer of the Liver.

Cirrhosis, Alcoholic.—See Cirrhosis, Portal, of the Liver.

Biliary.—See Cirrhosis, Biliary, of the Liver.

Portal.—See Cirrhosis, Portal, of the Liver.

Liver Enlargement.—**Causes.**—Acute congestion; chronic passive congestion in cardiac insufficiency; suppurative cholangitis; early stage of atrophic cirrhosis; hypertrophic cirrhosis; syphilitic hepatitis (diagnosed by the Wassermann or therapeutic test); abscess; tumor (carcinoma, sarcoma, angioma, echinococcus cyst); fatty degeneration, occurring in obesity, cachexia, phthisis, profound anæmia, alcoholism, and phosphorus poisoning; amyloid degeneration, due to prolonged suppuration, tuberculosis, syphilis, rickets, great debility, and cachexia; leukæmia; pseudo-leukæmia; obstruction of the common duct, due to stone, stricture, catarrh, tumor, etc.; hæmochromatosis; chronic malaria; diabetes; constricted liver.

Liver Flukes.—See Distomiasis.

Ptosis.—See Splanchnoptosis.

Lobar Pneumonia.—See Pneumonia, Lobar.

Lobular Pneumonia.—See Broncho-Pneumonia.

Lock-Jaw.—See Trismus.

Locomotor Ataxia.—See Ataxia, Locomotor.

Long Thoracic Nerve.—See Brachial Plexus.

Ludwig's Angina.—A submaxillary cellulitis spreading to the tissues of the floor of the mouth, base of the tongue, pharynx, and larynx, and caused by infection from an alveolar abscess, buccal ulcer, carious tooth, the tonsils, the submaxillary lymph glands, or indeed any septic wound of the mouth or throat. The specific fevers (scarlet fever, measles, diphtheria, smallpox, typhoid fever, erysipelas, tertiary syphilis, etc.), infected milk, poor health; alcoholism, and traumatism may be causative.

Causal bacteria include streptococci, staphylococci, pneumococci, Friedlander's bacillus, and Vincent's organism.

The condition is serious.

Treatment—Open the bowels with calomel followed by a saline (see Part 11). Administer concentrated liquid or soft nourishment. If removal of a diseased tooth, buccal antisepsis (using, say, Dobell's solution, Part 11, or hot normal saline solution, and a fountain syringe), and cold or hot applications do not cause the inflammation to subside, make an early incision parallel to the lower border of the jaw, and carry it inward until pus is reached. Then pack the wound lightly with dry gauze, and renew the dressing every day or less often until healing occurs.

In a spreading phlegmonous infection there is danger of acute œdema of the larynx. On the very first appearance of even the slightest respiratory difficulty apply cocaine and adrenalin (cocaine, 10 per cent., in adrenalin solution 1 : 2000) to the œdematous larynx, and then make multiple punctures with a laryngeal lancet. If this is not feasible, resort at once to tracheotomy (*q.v*).

A polyvalent serum may be injected, in these spreading cases, followed, if deemed advisable, by an autogenous vaccine (see Part 11).

Lumbago.—L. *lum'bus*, loin. See Myalgia.

Lumbar Pain.—L. *lum'bus*, loin. See Backache.

Lumbar Plexus.—L. *lum'bus*, loin; *plex'us* braid. Fig. 43.

See the chart, under Nerves, Peripheral, showing the distribution of sensory nerves in the skin.

The Anterior Crural Nerve.—Paralysis of this nerve results in inability to flex the thigh and to extend the knee, and in loss of the knee-jerk. The causes are fracture or dislocation of the hip, bone disease, abdominal tumor, psoas abscess, parturition, neuritis.

The Obturator Nerve.—Paralysis of this nerve results in weakness or loss of the power of adduction and inability to throw the thigh

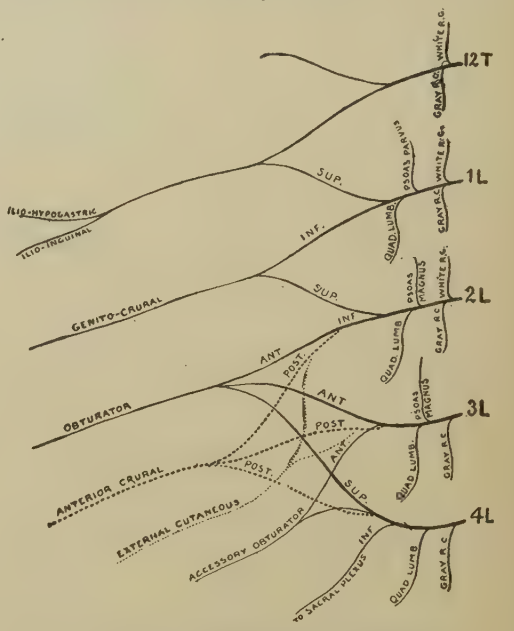


FIG. 43.—Diagram illustrating plan of lumbar plexus.

across its fellow while sitting. The causes are intra-abdominal or pelvic tumors, obturator hernia, parturition.

The External Cutaneous Nerve.—See Meralgia Paræsthetica.

For the Treatment of Nerve Lesions see under Brachial Plexus.

Lumbar Puncture.—See under Cerebro-spinal Fever.

Lung Affections.—See Pulmonary Affections.

Lymphadenia Ossea.—See Multiple Myelomata of the Bones.

Lymphadenitis.—L. *lym'pha*, lymph + Gr. *ἀδήν* gland + *-ιτις* inflammation.

I. Lymphadenitis Simplex.—Search for the portal of entry of the infection, viz., a tonsillitis, pharyngitis, stomatitis, rhinitis, adenoids, dental caries, alveolar abscess, otitis, furunculosis, eczema, herpes and other forms of dermatitis, pediculosis, balanitis, vulvo-vaginitis, acute infectious diseases, etc.

Open the bowels by means of castor oil or calomel, followed by a saline. (See Part 11: Drugs.) Apply to the inflamed gland, cotton wool, or cold or hot compresses, perhaps one of the following medicaments, *e.g.*, tincture of iodine, or iodine-petrogen,

or cataplasma kaolini or ung. Credé, gr. xv, rubbed in twice daily, or the following:

℞ Ichthyolis..... ʒiiss
Extracti belladonnæ foliorum.... gr. xlviii
Glycerini,
Petrolati, q.s., ad..... ʒi

If suppuration occurs, incise the gland, and pack lightly with dry gauze every day or less often until healing occurs. Where the gland contains multiple foci of infection, it may be best to excise it.

Ionic medication is recommended for chronic suppurative adenitis (see under Inflammation). First aspirate the pus, then inject a solution of iodine or potassium iodide, and introduce a negative needle electrode, insulated except at its point. Employ a current of 10 to 15 milliampères for ten minutes. Three or four applications are usually required. (Tousey.)

In simple chronic adenitis, prescribe an abundant diet, fresh air day and night, and syrupus ferri iodidi, arsenic and codliver oil. X-ray therapy (*q.v.*) is beneficial (see also under Eczema.)

II. Lymphadenitis Tuberculosa.—This is usually characterized by much periadentitis. A positive diagnosis is made by the microscopic examination of an excised gland. The bacillus is almost always of the bovine variety, evidently derived from infected milk.

A general hygienic and tonic regimen is indicated (see Tuberculosis, Pulmonary). Prescribe the syrupus ferri iodidi, arsenic and codliver oil (see Part 11). It is best to remove early and completely all the infected glands. If sinuses are present, first heal them by curetting and injections, and perhaps ionic medication (see above). Attend also to possible portals of infection (see above). X-ray therapy (*q.v.*) is of great benefit. One-third or one-half a pastille dose may be administered twice a week; or, in bad cases, a pastille dose once a week. If operation is resorted to, a few preliminary exposures should be given.

Lymphadenoma.—L. *lym'pha*, lymph + Gr. *ἀδήν* gland + *-ωμα* tumor. See Lymph-Gland Enlargement.

Lymphangitis.—L. *lym'pha*, lymph + Gr. *ἀγγεῖον* vessel + *-ιτις* inflammation. I. Acute lymphangitis is caused by skin or mucous membrane infection, herpes, insect bites, ringworm, erysipelas, poison-ivy or sumach, sunburn, the X-rays, acute infectious diseases, tuberculosis, syphilis, gonorrhœa, bubonic plague, etc.

The symptoms are localized redness, œdema, pain, and tenderness, sometimes in the form of a line or lines advancing toward the trunk, swelling and tenderness of the adjacent lymph glands, and pyrexia. In lymphatic infections on the volar surface of the hand, the inflammation pursues the shortest course along the lymphatics to the back of the hand. Remember this when searching for the atrium of infection (Kanavel). (In phlebitis the symptoms are much less marked, the inflamed vein, if palpable, is larger, and the lymph glands are not apt to be involved.)

Prognosis.—This is usually good. Tenosynovitis and subcutaneous phlegmons sometimes result. If suppuration occurs, the symptoms become more severe and the prognosis serious. Septico-pyæmia (*q.v.*) is to be dreaded, especially in those over thirty-five years of age.

Treatment.—Apply continuous voluminous quite hot compresses of bichloride, 1 : 1000 in water, or 1 : 2000 in 50 per cent. alcohol, or lysol, 1 teaspoonful to the quart, or boric acid, a heaping tablespoonful to the quart, or perhaps ichthyol, ʒiiss, in glycerine and vaseline, ʒi. Open abscesses freely, but make no other incisions. For the purpose of preventing the rapid absorption of toxines, Kanavel applies Bier's constriction (see under Inflammation) for from twelve to eighteen hours, and sometimes reapplies it for another eighteen hours, after an intermission of several hours.

Local and systemic rest and fresh air are of importance. Open the bowels, and prescribe a concentrated liquid and soft diet, tonics and stimulants.

II. Chronic lymphangitis is caused by neighboring ulcers or abscesses, gonorrhœa, tuberculosis, syphilis, bubonic plague, filariasis, malignant tumors, etc.

Possible sequelæ of extensive acute or chronic lymphangitis and obliteration of the lymph vessels are chronic œdema and elephantiasis, lymphangioma circumscriptum, lymph fistula, chyluria, etc.

Lymphatism.—See Status Lymphaticus.

Lymph Gland Enlargement.—**Causes.**—Pyogenic infection (see Lymphadenitis Simplex); chancroid; gonorrhœa; syphilis; tuberculosis (see Lymphadenitis Tuberculosa); leukæmia; Hodgkin's disease; lymphosarcoma; cancer; plague; sleeping sickness; glandular fever; etc.

Lymph Gland Inflammation.—See Lymphadenitis.

Lymphocytosis.—L. *lym'pha*, lymph + Gr. *κύτος* cell. The normal number of lymphocytes per cmm. of blood is 1200 to 1500 (—3500) (see Blood Examination). The

normal ratio to other white-cells is 20 to 25 per cent.

Causes of Lymphocytosis.—Infancy; digestion; poor nutrition in children; lymphatism; rickets; gastro-intestinal disturbances in children; cervical adenitis; pertussis; most infectious diseases of children; syphilis; tuberculosis; scurvy; chlorosis; pernicious anæmia; splenic tumors; lymphatic leukæmia; splenomyelogenous leukæmia; splenectomy; acute sepsis, especially tonsillitis, with or without glandular enlargement; pyorrhœa alveolaris: alveolar abscess; typhoid fever; amœbic dysentery; disease of the thyroid gland, hypophysis, and suprarenal gland.

Lymph Vessel Inflammation.—See Lymphangitis.

Macroglossia.—Gr. *μακρός* large + *γλῶσσα* tongue. **Causes.**—Glossitis, acute or chronic; hydrargyrism; multiple gummata; cretinism; muscular hypertrophy occurring in idiots, occasionally in normal children; cavernous lymphangioma.

Treatment.—This is causal. In appropriate cases, if the tongue is so large as to interfere with eating and breathing, excise a large V-shaped piece of the anterior portion, and suture the cut edges with silk.

Madura Disease.—See Part 5, Skin Diseases.

Malacosteon.—Gr. *μᾰλᾰκός* soft + *ὀστέον* bone. See Osteomalacia,.

Malaria.—It. *mala aria*, bad air.—A common infectious disease, occurring south of 45° north latitude in the Western Hemisphere, and 62° north latitude in the Eastern Hemisphere, caused by four varieties of hæmatozoa, which are transmitted from man to man by the anopheles mosquito, and characterized clinically by an incubation period of from several days to several months, followed by chills or chilliness and fever of various types. The fever is always intermittent (quotidian, tertian, or quartan), unless more than one variety of parasite is present, or more than one generation of a single variety is present, which segment at different times, and thus produce a remittent, continued, or irregular fever. In typical cases, following a prodromal period of malaise, anorexia, and headache lasting several days, there occurs a paroxysm of chill or chilliness, fever, and sweating, in the sequence named. These paroxysms always coincide with the segmentation or sporulation of a group of parasites.

Masked infections occur, manifested, perhaps, only by a subnormal or normal temperature, headache, vertigo, neuralgia, acute pulmonary congestion, diarrhœa or dysentery, etc., with the presence of organisms in the blood. Latent infections occur, too, in which parasites are present in the blood without symptoms. The disease may relapse after a long interval of normal health. Other diseases may mask a malarial infection. Following repeated infections improperly treated, a marked anæmia and splenomegaly may develop (malarial cachexia).

Four varieties of malarial parasite are distinguished—(a) tertian (the commonest and mildest, offering a good prognosis; cycle of development approximately forty-eight hours); (b) quartan (rare, less mild, but offering also a good prognosis; cycle of development seventy-two hours); (c) quotidian æstivo-autumnal (cycle of development twenty-four hours), and (d) tertian æstivo-autumnal (cycle of development seventy-two hours, both the most serious of all forms and the commonest in the tropics, and by far the most common cause of the grave pernicious malaria, forms of which are the comatose, delirious, tetanic, eclamptic, hemiplegic, dysenteric, choleraic, algid (with collapse), cardialgic, hemorrhagic (See Black Water Fever), pneumonic, and bilious (with vomiting and jaundice).

The diagnosis of malaria is made by repeated blood examinations (apt not to be successful if the patient has recently taken quinine), and by the therapeutic (quinine) test. Periodicity of symptoms and an enlarged spleen are suggestive signs. (See Blood Examination.)

Treatment.—Put the patient to bed on a liquid or soft diet and open the bowels thoroughly with calomel, followed by a saline (See Part 11). Prescribe quinine: for adults gr. v–x–xv, in capsule or in solution well diluted, every four to six to eight hours, usually gr. xxx in twenty-four hours. Says Holt, for an infant of one year, give as a rule gr. viii–xii of the sulphate, gr. x–xiv of the bisulphate, daily; even double these amounts may be given. "Children from five to ten years old require almost as large doses as do adults." To infants the quinine is perhaps best given in powder form. Kerley says: "The best menstruum is a preparation of yerba santa, known as yerbazine (made by Lily and Company)." If it disagrees because of the sugar it contains, the quinine bisulphate, he says, should be given in solution in distilled water, followed by a teaspoonful of orange juice: to children under eighteen months, even sometimes under four months, gr. ii–iii at a dose, no more than four doses in twenty-four hours; two to six years, gr. iii every two hours, 15 to 30 grs. daily. He says, continue the

quinine in full doses for a week after the temperature fails to rise, unless the latter is subnormal; then give it one week out of every month for at least a year. Says Sandwith, "For an adult, less than five grains or more than thirty grains in the twenty-four hours are useless." The large dose of 15 grains may be given just before the onset of a paroxysm, or during the decline in temperature, with the object of killing the young amœboid parasites before they segment. Some say that it is best given three to four to six hours before a paroxysm, so that it will be in the blood in maximum concentration at the time of the attack, when the spores are liberated. Quinine should not be given during a paroxysm.

After the paroxysms have ceased, or the fever, if remittent, continued or irregular, has disappeared (about two or three days), give five grains of quinine three times a day for a week, then five grains daily for three months; and resume the treatment every spring and fall for several years. This after treatment is necessary in order to prevent relapses or recurrences due to the multiplication of unkilled parasites.

Quinine sulphate is practically insoluble in water; but is dissolved by the addition of one drop of dilute sulphuric or dilute hydrochloric acid for each grain of the quinine. It should then be taken well diluted in water. Quinine bisulphate is soluble in eleven parts of water without acid, and is therefore to be preferred to the sulphate. Quinine hydrochloride is soluble in forty parts of water. Quinine bihydrochloride or bimuriate is soluble in two parts of water. It is for this reason the best preparation. Capsicum, gr. i, may be added to each dose of quinine to promote absorption,

℞ Quininæ bisulphatis..... ʒii ℈ii (gr. v per dram)
Tincturæ capsici.. ʒiss (nearly ♏iii per dram)
Aquæ, q.s., ad.... ʒiv

M. Sig.—One dram every 4 to 6 to 8 hours, or as directed.

In intractable and pernicious cases, administer the bihydrochloride intramuscularly:

℞ Quininæ bihydrochloridi..... gr. lxxv
Aquæ destillatæ, q.s., ad..... ʒiiss

Boil; then add one or more drops of hydrochloric acid to dispel the turbidity. Fifteen minims contain 7½ grains of quinine.

Inject about twenty-four grains in divided doses every twenty-four hours, deep into the muscle, under careful asepsis, until the amœboid parasites disappear from the blood (the crescents are not affected by quinine); then give ten to fifteen grains every sixth day for two months, etc., as directed above. Prescribe also iron, arsenic, and strychnine (see Part 11), in these cases; and remove the patient to a high, dry, non-malarious region. To reduce the liver and spleen, prescribe saline cathartics, or laxative mineral waters.

In alarming pernicious cases, introduce the quinine intravenously (*q.v.*), gr. xv of the bihydrochloride in 300 c.c. of normal saline solution (0. 6 per cent.) boiled, given slowly and carefully while watching the pulse closely. This may be repeated every six, eight, or twelve hours, as required.

Rosenau and Anderson write: "The subcutaneous or intramuscular injections are contraindicated in cases suffering from ulceration or septic diseases and in very young children."

If quinine cannot be taken because of an idiosyncrasy, or in children because of its taste, give the tasteless euchinin (ethyl carbonate of quinine), in double the doses of quinine; or aristoquin (di-ethyl carbonate of quinine), gr. vii per dose, up to 22 grs. per day; or quinine tannate with chocolate; or try methylene blue, gr. viii–xv, in capsule, in twenty-four hours. Discontinue the latter when the urine becomes deeply colored, or kidney irritation results.

Rectal administration of the quinine may sometimes be expedient. It should be preceded by a cleansing enema, and given in twice the dosage per mouth: quinine hydrochloride, gr. x–xv in water, 200 c.c., with tr. opii, gtt. x.

If it is desired to give the quinine intramuscularly in intermittent fever, it is best given one hour before the paroxysm.

During a paroxysm, give, in the cold stage, hot drinks, and wrap the patient in blankets; in the hot stage, give cold lemonade and tepid or cold water sponges. For headache, apply an ice-cap to the head. Give cracked ice for vomiting, or inject morphine hypodermically. Give morphine also for nervous symptoms. Give strychnine, brandy, normal saline infusions (0.6 per cent.) and hot applications to the precordium for heart weakness or collapse. Give opium in the dysenteric and choleraic forms (see also Diarrhœa).

After a cure has been effected, build up the patient's strength by means of a liberal diet, fresh air day and night, and tonics, such as the elixir ferri, quininæ, et strychninæ phosphati, Fowler's solution, and Blaud's pills (for all drugs see Part 11).

(See Black Water Fever, for the consideration of hæmoglobinuric cases.)

Prophylaxis embraces: 1. The covering of the surface of breeding pools with kerosene, about one ounce to fifteen square feet. In large bodies of water the edges alone need be covered.

2. The use of fish in reservoirs of drinking water.

3. Drainage, or the filling up of those places that can not be drained.

4. The removal of all tin cans, broken bottles, puddles, etc., in which mosquitoes can breed, and the covering of water barrels and privies with netting.

5. Screens for houses: "copper bronze screens of 18 mesh to the inch."

6. Screening of the patient with wire gauze. The dangerous period is between sundown and bedtime; the anopheles mosquito is chiefly nocturnal in its habits.

7. Destruction of mosquitoes in rooms by saturating the rooms with the fumes of burning pyrethrum powder.

8. The use of kerosene, turpentine, camphor, menthol, citronella, oil of pennyroyal, oil of anise, oil of lavender, or oil of eucalyptus on the skin; oil of bergamot, 1 part, kerosene, 10 parts.—Craig.

9. The use of quinine, gr. ii t.i.d. (half this amount to a child), or gr. v–x every day, or gr. viii–x, two or three times a week.

Malignant Jaundice.—See Atrophy, Acute Yellow, of the Liver.

Malignant Neoplasms.—L. *malig'nans* acting maliciously; Gr. *νέος* new + *πλάσμα* formation. No cure other than by early complete removal has yet been discovered. In inoperable and recurrent cases the use of radium or the X-ray (*q.v.*) is indicated. These agents are used also to prevent recurrence after operation. They should be used as soon as possible after operation. The radium may be introduced directly into the substance of the growth. Says Knox: "In a large tumor a tube containing 50 mgrms. with .5 mm. filter may be left in situ for twenty-four hours"; and "when the growth is very large, several tubes introduced at equal distances from one another may be left for the same time." Treat recurrent sarcoma or carcinoma by external applications of as large doses as possible, "200 or 300 mgrms.," says Knox, "in platinum tubes, with 2 or 3 mm. filter of lead and about twelve layers of lint between the radium and the skin surface." "The area to be treated may be divided into several portions, and an exposure of twenty-four hours given to each." Finzi's dicta, quoting Horder, are as follows:

1. "Use maximal doses."

2. "Repeat as frequently as is safe."

3. "Use sufficient filtration."

4. "Treat thoroughly, not only the growth itself, but any region where it is likely a metastasis might exist."

5. "Continue the treatment after all traces of disease seem to have disappeared."

Metallic preparations, *e.g.*, iron or arsenic, may be given when the patient is receiving radiations, for the purpose of inducing secondary radiations in the body.

In using the X-rays, cover a wide area, in series, if need be, in order to include all possible lymphatic distribution. A plan similar to Adamson's in the treatment of ringworm of the scalp (See Part 5) should be employed. The first dose should be given unfiltered, the second, third, and fourth at intervals of two weeks or more, with a .5 mm. filter, then a 2 mm. filter for three or four doses, and later a 3 mm. filter (Knox). Says Knox: "In all, twelve exposures to the whole area should be given"; and "towards the end of the series the interval should be about three weeks." The patient should be kept under observation for years afterward, and any recurrence promptly dealt with.

In using large doses through thick filters, one should also use several layers of chamois leather upon the skin, to protect the latter from the secondary rays given out by the filters. Ulcerated skin areas require no protection. Such areas are irradiated frequently until they begin to break down.

In recurrent cases, employ vigorous treatment, "until a marked reaction is obtained all over the affected surface and well beyond it." (Knox.)

Fungating and sloughing growths may be largely destroyed by means of diathermy (*q.v.*).

Treat ulcerations antiseptically, preferably with dry dressings; hemorrhage by ligation of the bleeding vessel, the curette, or the actual cautery; excessive secretion of mucus by belladonna (Part 11). For pain, administer Schlesinger's solution hypodermically:

℞ Scopolaminæ hydrobromidi.. 0.0025 (gr. 1/26)
Dioninæ..... 0.4 (gr. vi)
Morphinæ hydrobromidi.... 0.2 (gr. iii)
Aquæ destillatæ, q.s., ad.... 10.c.c. (℥iiss)
M. Sig.—About half-a-barrelful, or 5 to 7 minims hypodermically. ♏v contains scopolamine, gr. 1/780; dionin, gr. 1/6; morphine gr. 1/10.

(See also cancer of the various organs).

Malignant Œdema.—See Anthrax, in Skin Diseases, Part 5.

Pustule.—See Anthrax, in Skin Diseases, Part 5.

Malignant Tumors.—See Malignant Neoplasms.

Malnutrition.—See Marasmus.

Malta Fever; Mediterranean Fever; Undulant Fever.—A chronic tropical and subtropical bacteræmia, caused by the micrococcus melitensis, and characterized by an incubation period of six to ten days, followed by an undulating, relapsing fever lasting usually three months or longer, with profuse sweats, neuralgia, neuritis, arthritis, perhaps orchitis, enlarged spleen, constipation, and cachexia.

The diagnosis may be made from blood-cultures and the agglutination test. The latter, however, is not infallible. Non-specific agglutinins may be present. A high dilution, 1 to 400, should be used.

Recovery is the rule; although a series of relapses may sometimes prolong the disease for even several years.

Most cases are transmitted to man by the drinking of the milk of infected Maltese goats; but cows, oxen, mules, asses, rabbits, fowls, human beings, cow's milk, cream, butter, cheese, urine, fæces, and possibly dust and insects may disseminate the disease.

Treatment.—This is symptomatic, as in typhoid fever (*q.v.*, for details). The disinfectant precautions employed in typhoid fever must also be employed here. Keep the patient between blankets on account of the sweats, and dry and powder the skin frequently. Guard against bed-sores (*q.v.*). Keep the mouth and teeth clean. Employ the cool pack every three hours when the temperature rises above 103° F. A pitcher of lemonade should be kept at the bedside. For headache employ the ice-cap, and, if necessary, phenacetin, gr. v–x; for insomnia some one of the remedies enumerated under Insomnia; for arthritis, tr. iodi, chloroform, or belladonna liniment, hot lead and opium fomentations, or cotton wrapping and immobilization; for constipation, calomel, cascara, salines, or enemata. Administer stimulants (strychnine, alcohol), when required. Vaccine may be tried. (See Part 11 for Drugs, etc.)

The diet should be liquid while there is fever, and very nutritious soft food in the intervals. Do not return to ordinary diet until after two weeks of normal temperature.

Warm clothing should be worn after recovery, to avoid neuralgic attacks.

Prophylaxis.—Sterilization of the water and food, the use of screens, general sanitation, and the avoidance of residence in infected regions during the hot, dry months, are effectual preventive measures.

Mammary Gland Affections.—L. *mam'ma*, breast.—See Breast Enlargements.

Mania a Potu.—Gr. *μανία* madness; *πότος* drinking. (See Alcoholism.)

Marasmus; Atrophy, or Simple Wasting; Malnutrition; Decomposition.—A severe grade of infantile malnutrition and wasting, due to no other apparent cause than bad hygiene (especially overcrowding, lack of fresh air, insufficient food, and improper food), and a feeble constitution. A previous acute disease may be the predisposing cause.

Wasting due to tuberculosis, syphilis, rickets, malaria, intestinal worms, malignant disease, the anæmias, acute or chronic gastro-intestinal disease, and organic disease of the lungs, heart, stomach, intestines, liver and kidneys, is not here considered. These diseases must be excluded.

Treatment.—A healthy wet-nurse should be procured if practicable; otherwise careful artificial feeding should be carried out. Low fat, low protein, and relatively high sugar formulæ are usually the best, says Holt. Begin, say, for a six-months baby, with a three-months formula (Holt's); for a nine-months baby, with a six-months formula; for a twelve- to twenty-four months baby, with a six- to twelve-months formula. The milk may be partially peptonized (*q.v.* in Part 11). (See Infant Feeding.)

If the temperature is habitually subnormal, anoint the body with oil and surround it with cotton-wool and hot water bottles. Gentle massage with cocoa butter may be beneficial. Fresh air is of primary importance.

The Middle-West method of treatment, as described by Gerstley, is as follows: If serious diarrhœa is present, withdraw all food but water, or weak tea sweetened with saccharin (Part 11), for six to twelve hours, never longer. Then begin feeding with albumen milk, 10 feedings per day of one ounce each. Begin with albumen milk at once if there is no diarrhœa. Albumen milk is prepared as follows: Mix 1 quart of buttermilk and 1 quart of water and boil a few minutes. Put aside for at least half an hour and then pour off the supernatant whey water from the curd. Add to the latter 4 oz. of boiled cream and sufficient whey water to make one quart (to supply salts). Add 3 per cent. dextrin-maltose (or Mellin's Food or Horlick's Malt Food), and, if need be, sweeten with a little saccharin. Every other day increase the total daily amount (beginning with 10 oz.) by 2 or 3 ounces, up to a maximum of 3 oz. for every pound of body weight. Do not change the albumen milk until the weight curve has straightened out (let the weight curve be the guide and not the stools). Then cautiously increase the carbohydrate to 5 per cent. If no gain

in weight follows, increase gradually to 7 per cent. If the weight still continues stationary, increase slowly to 9 per cent.; but make no increase if the weight falls. Such high carbohydrate can not be used with any other food but albumen milk. After four to six weeks of albumen milk, employ ordinary milk mixtures (see Infant Feeding).

In breast-fed infants, express the milk from the breast and give small quantities, beginning with an ounce and gradually increasing. When the weight curve has straightened out and the child begins to gain, gradually put him back on the breast, preferably with half albumen milk.

In older children prescribe a brief hunger period, if diarrhœa is present, then begin feeding a high protein diet, beginning with small amounts and gradually increasing, using the weight curve as a guide. Withdraw milk, or else dilute it one-third or one-half, to dilute the whey, and feed eggs, custards, scraped meat, cottage cheese, nonfermentable carbohydrates, *e.g.*, cornstarch, farina, arrowroot, Cream of Wheat, well-boiled rice, mashed Irish potatoes, and zwieback, and supply salts in broths, soups, and vegetable purées.

Mast-cell Leucocytosis.—German, *Mastzellen*, food-cell. Normal number per c.mm. of blood, 0–50; about 0.5 per cent. of the white blood-cells

Causes.—Myelogenous leukæmia; rarely cancer, tuberculosis, syphilis, skin lesions, or bone infection. See Blood Examination.

Mastitis.—Gr. μαστός breast + ιτις inflammation. Acute pyogenic inflammation usually occurs in the lactating breast, rarely in typhoid fever, tuberculosis, osteomyelitis of the underlying ribs, empyema, traumatism, etc.

Treatment.—Open the bowels. Apply hot wet bichloride or boric acid compresses covered with a hot water bag. As soon as the presence of pus is evident, make multiple incisions radiating from the nipple, and establish thorough drainage. Open a submammary abscess at the lower edge of the breast. Employ dry dressings or hot boric acid irrigations until healing occurs. A tuberculous breast should be removed.

For actinomycosis, see Part 5, Skin Diseases.

Syphilitic mastitis requires, of course, specific treatment (see Syphilis).

Mastodynia.—Gr. μαστός breast + ὀδύνη pain. (See Neuralgia.)

Masturbation.—L. *ma'nus*, hand, + *stuprar'e*, to rape. Hypertrophies and corrugations of the genitals are diagnostic, says Kelley, and " endometritis, vaginal catarrh, and trigonitis result from long indulgence."

Etiology.—Neurotic habit; habit of sucking; tight clothing; uncleanliness; adherent prepuce in both boys and girls; elongated foreskin; phimosis; balanoposthitis; vulvovaginitis; eczema of the labia; pin-worms; highly acid, concentrated, or diabetic urine; anal fissure; chronic constipation; leucorrhœa; all pelvic disorders.

Treatment.—Remedy all possible causal influences. Strip the prepuce, apply a solution of cocaine, 10 to 20 per cent., for ten minutes, if necessary, and free adhesions with a blunt probe back to the sulcus in back of the corona; cleanse the preputial sac, and apply vaseline every day for two weeks.

Build up the general health. Enjoin cleanliness, local and spinal cold water sprays, a hard bed, light bed covering, prompt rising in the morning, physical work, and fresh air exercise. Prohibit tea, coffee, alcohol, spices, highly seasoned foods, sweets, and highly nitrogenous foods. Allow no food within three or four hours of bed-time. If hyperacidity of the urine seems to be a factor, prescribe sodium bicarbonate (Part 11), and restrict the eating of meat.

The wrists may be tied to the neck. In leg-rubbing in infants, keep the legs apart with a large coarse napkin, or a towel over the napkin. In older children employ the knee-crutch.

Close and persistent supervision is required to effect a cure.

Measles.—A common acute infectious and contagious epidemic disease, characterized by an incubation period of seven to eighteen days, followed by languor, headache, fever, conjunctival, nasopharyngeal, and bronchial catarrh, with lachrymation, photophobia, sneezing, and cough, and the appearance, on the inner surface of the cheeks, of bluish-white dots surrounded by red areolæ (Koplik's spots), followed, after three to four or five days by a rose-red, blotchy, maculo-papular rash, occurring in crescentic patches, and spreading from the face downward. The lymphatic glands are usually enlarged. No leucocytosis is present when the eruption appears. The fever and rash begin to decline in about three days, followed by some desquamation.

Prognosis.—Measles is a very serious disease in those under two years, and in the aged. Tuberculosis is a common sequel.

Treatment.—Isolate the patient (see Disinfection). Put him to bed in a warm, well-ventilated room at a temperature of 60° to 70° F. If he can be made to wear blue or smoked glasses, the room should not be darkened. Open the bowels well with calomel, or castor oil, or rhubarb, or cascara (see Part 11), and secure a daily bowel movement. Prescribe concentrated liquid

nourishment every two, three, or four hours, and an abundance of water in the form of weak orangeade or lemonade. In bottle-fed infants the milk should be diluted one-half. If the rash does not come out well, give warm drinks and a hot bath. Keep the mouth, throat, and nostrils clean with Dobell's solution (*q.v.*), used as a spray. For the eyes, instil boric acid solution, gr. x ad ℥i; and for gumming of the eyelids employ sterile vaseline or ung. hydrarg. ox. flav., gr. i ad ℥iv of vaseline. A mild fever mixture may be prescribed:

℞ Spiritus ætheris nitrosi... ℥ii (gr. v per dose)
Potasii citratis..... ℥i (gr. iiss per dose)
Liquoris ammonii acetatis ℥iss (℥ss per dose)
Syrupi simplicis..... ℥i
Aquæ camphoræ, q.s., ad. ℥iv

M. Sig.—A teaspoonful every three hours (for a child of 3 to 5 years).

If the fever becomes high, employ hot or tepid sponging, or the tepid bath gradually reduced, and an ice-cap to the head. Hydrotherapy is also useful in allaying nervousness and insomnia, as are also phenacetin, antipyrin, and codeine.

For laryngitis, bronchitis, and pneumonia (*q.v.*), one may employ for from five to ten minutes, every one or two hours, inhalations of creosote, gtt. x to the pint, or comp. tr. benzoin, ℥i to the pint of water, heated in a croup-kettle or steam inhaler; and heat or cold or counter-irritation may be applied to the throat or chest. For troublesome cough, prescribe paregoric, or Dover's powder, or codeine. A croupy cough may be relieved by a good dose of sodium bromide.

℞ Syrupi ipecacuanhæ ℥i–ii (♏v–x per dose)
Ammonii chloridi... gr. vi–xii (gr. ss–i per dose)
Syrupi tolutani..... ℥ss (♏xx per dose)
Aquæ, q.s., ad..... ℥ii

M. Sig.—One teaspoonful every two or three hours, as an expectorant (for a child of from two to five years).

For vomiting, withhold all food, and administer an effervescent water, or equal parts of lime water and cinnamon water.

For diarrhœa, clear out the digestive tract with calomel in divided doses, followed, if necessary, by bismuth sub-nitrate; and diet the patient carefully.

Broncho-pneumonia, ileo-colitis, otitis media, noma, etc., are to be guarded against.

When desquamation begins, anoint the skin daily with sweet oil.

Keep the patient in quarantine for three weeks from the onset of the rash, or four weeks from the beginning of the disease; longer if catarrh persists; then practice disinfection as directed under Disinfection.

Measles, German.—See German Measles.

Meat Poisoning.—See Poisoning.

Median Nerve.—See Brachial Plexus.

Mediastinal Inflammation.—(See Mediastinitis.)

Mediastinal Tumors.—L. *mediasti'num*, median partition. **Varieties.**—Carcinoma, sarcoma, lymphoma, fibroma, lipoma, enchondroma, teratoma, gumma, dermoid cyst, hydatid cyst, Hodgkin's disease, leukæmia.

The symptoms are those of intrathoracic pressure, viz., pain, dislocation of the heart and lungs, dyspnœa, perhaps a brassy cough and alteration of the voice, perhaps venous engorgement, œdema and cyanosis, often pleural effusion, perhaps dysphagia, perhaps local bulging, or bone erosion and perforation of the chest wall.

Mediastinal tumor is to be distinguished from aneurysm. The X-ray and the Wassermann test give valuable information. Some cases are operable. If not operable, try the X-rays, as described under Pulmonary Tumors.

Mediastinitis. — Mediastinal inflammation is manifested by deep-seated pain, tenderness, pyrexia, and in acute cases more or less prostration.

Acute cases are serious; chronic cases less so.

Causes of Acute Mediastinitis.—External penetrating wound; blow on the chest; crushing of the chest; internal penetrating wound via the œsophagus, trachea or bronchi, caused by a foreign body or by instrumentation; adjacent inflammation, affecting the lung, pleura, bronchi, trachea, larynx, œsophagus, pericardium, peritoneum, lymphatic glands, ribs, sternum, or cervical cellular tissue.

Causes of Chronic Mediastinitis.—Tuberculosis of the vertebræ, lymphatic glands, ribs, or sternum.

Treatment of Acute Mediastinitis.—Put the patient to bed, apply an ice-bag, and open the bowels with calomel, followed by a saline. Quinine may be administered if desired; or sodium pyrophosphate. (For drug formulæ see Part 11.) Theobald regards the latter as a very useful agent in combating suppuration.

If symptoms of suffocation occur, the anterior mediastinum may be explored by means of trephine, rongeur forceps, and aspirating needle; the posterior mediastinum by removal of the vertebral transverse processes and portions of the adjacent ribs, followed by blunt dissection. If pus is found, insert a rubber drainage tube or sterile gauze.

Medical Electricity.—Electricity is either static (electricity at rest) or dynamic (electricity in motion). The latter is either galvanic (direct or unidirectional), or faradic (induced electricity with rapid alternations of direction).

Static Electricity.—If two insulated dissimilar bodies are rubbed together, one body accumulates on its surface, under tension, all the positive electricity which both bodies originally possessed, and the other body accumulates all the negative electricity.

Like charges of electricity, whether positive or negative, are mutually repulsive, whereas unlike charges are mutually attractive.

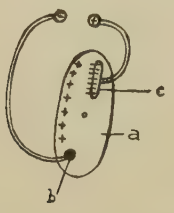


Fig. 44.—Static machine.

the machine. C is a metal collecting comb near the glass plate. The positive charge upon the plate attracts negative electricity to the comb and repels positive electricity to the pole. The negative electricity of the comb escapes to the plate and neutralizes the positive charge there, but this is again restored by friction at another part of its revolution. For a description, etc., of the more complicated static machines employed in therapeutics, consult special works on medical electricity, *e.g.*, Tousey's.

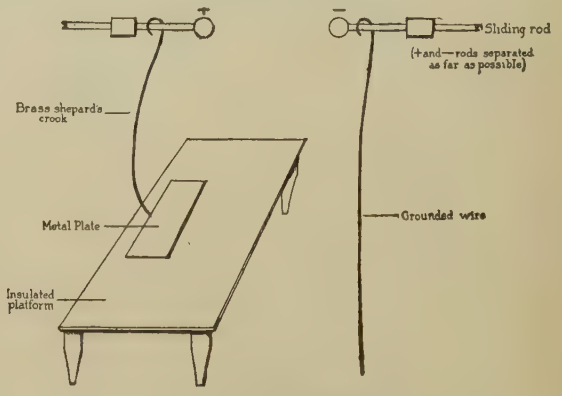


Fig. 45.—Static insulation

If the insulated body, a, Fig. 46, charged with positive electricity,

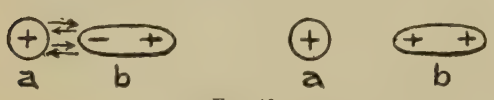


Fig. 46.

is brought in contact with the neutral insulated body, b, the negative electricity from b is attracted to a, and some of a's positive electricity passes to b, so that, if a is now removed, it leaves b charged (by conduction) with positive electricity.

If a is brought near to b, but not in contact with it, negative electricity will accumulate on the near pole of b, and positive electricity on the far pole. If, now, a conductor is brought in contact with the far or positive pole of b, and then removed, a being still near the negative pole of b, the latter will lose its positive electricity and remain charged (by induction) with negative electricity.

If, during the friction of two insulated dissimilar bodies, one of the bodies, say the negative, is connected with the earth, it receives more negative electricity from the earth (attracted by the positive body) which produces by induction a still stronger charge in the positive body.

Fig. 44 represents a static machine of the simplest type. A positive charge is produced on the revolving glass plate, a, by friction, and a negative charge on the rubber, b, which is connected with one pole of

Static insulation or the static or Franklinic bath is administered as follows:

The patient sits in a chair upon the platform (Fig. 45), with the legs of the chair or his feet on the metal plate. During the operation of the machine the surface of his body is charged with positive electricity. A spark may be administered by bringing a metal ball electrode (grounded or connected with the negative pole of the static machine) near the patient; a breeze, effluve, or spray, by bringing a pointed electrode near the patient. If the static wave or Morton wave current is desired, the prime conductors of the static machine are placed in contact to start with, and then slowly separated.

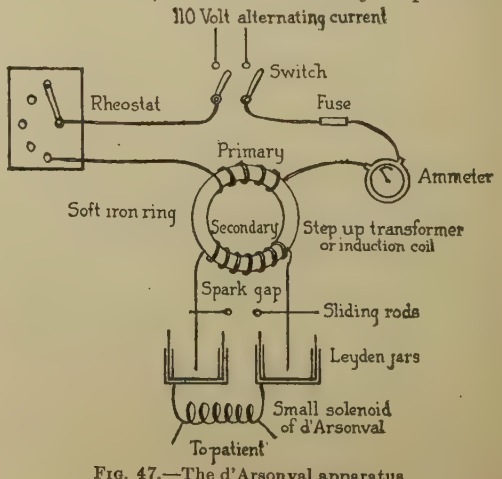


Fig. 47.—The d'Arsonval apparatus

If the static induced current is desired, the smallest Leyden jars are suspended by their knobs, one to each pole of the static machine, and their outer coats are connected with the patient by means of sponge electrodes. The machine is first charged before connecting with the patient, and the discharging rods are in contact. The latter are slowly separated to a degree controlled by the sensation of the patient, usually no greater than $\frac{1}{8}$ inch (Tousey).

In all static appliances the connections should be perfect.

A Leyden jar or condenser consists of a glass jar, coated for about half its height from the bottom, on the outside and inside, with tin-foil, and with a cork which is perforated by a brass rod terminating above in a knob and connected within the jar with the inner coating of tin-foil by means of a chain. To charge the jar, its knob is brought near enough to one pole of a static machine, say the positive, to receive, by conduction, convection, or a spark, a charge, while the outer tin-foil coating is grounded by being held in the hand. The knob and inner coating are thereby charged with positive electricity from the static machine, and the outer coating with negative electricity from the earth. A Leyden jar placed upon an insulator cannot be charged. The outer coating must be connected with the earth or with a conductor excited oppositely to that charging the inner coating. The electric charge resides entirely upon the surface. If the two coats of the charged jar are brought in contact, the jar is discharged with the occurrence of a large spark. The electrical neutralization or equilibrium is not effected instantaneously, however, but there occurs a series of oscillations, back and forth, at an extremely rapid rate. These oscillations constitute what are known as high-frequency currents and as the d'Arsonval, Oudin, and Tesla currents. In order to obtain a more or less continuous high-frequency flow, the Leyden jar must be continually recharged each time it is discharged.

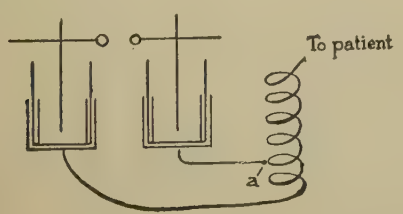


Fig. 48.—Oudin resonator.

The d'Arsonval, Oudin, and Tesla currents are different types of high-frequency currents. Fig. 47 represents the d'Arsonval, Fig. 48 the Oudin, and Fig. 49 the Tesla apparatus.

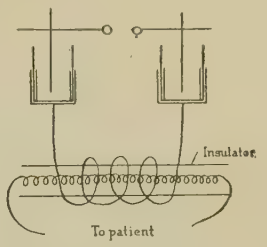


Fig. 49.—Tesla transformer.

The strength of the current to the patient depends upon the strength of current in the primary circuit and the length of the spark-gap. If the supply current is a direct one, an interrupter must be interposed in the primary circuit. In the Oudin resonator the contact, a, is adjustable, *i.e.*, it may be moved up or down. When it is moved above or below a certain point, the discharge to the patient decreases. When it is at the point of maximum discharge the apparatus is said to be in resonance.

The d'Arsonval high-frequency current is of low voltage and comparatively high ampèrage. The Oudin and Tesla currents are of high voltage and comparatively low ampèrage.

Diathermy or thermopenetration (see Diathermy) is a form of treatment by means of high-frequency currents of comparatively low voltage and great milliampèrage.

Galvanic Electricity.—The simplest form of generator of galvanic electricity is the galvanic cell (Fig. 50). It consists of a jar of

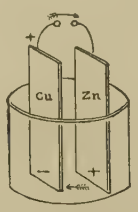


Fig. 50.—Galvanic cell.

dilute sulphuric acid in which are dipped a zinc plate and a copper plate connected above by a copper wire. An electrical current is thereby generated, which flows from the zinc to the copper through the liquid and from the copper to the zinc above, and bubbles of hydrogen gas collect on the copper plate. This collection of gas (known as polarization of the cell) gradually diminishes and finally stops the action of the cell, so that various modifications have been devised to prevent it. In the Daniell cell, the zinc plate, immersed in dilute sulphuric acid, is separated from the perforated copper plate, which is immersed in a solution of copper sulphate, by a porous wall, and the hydro-

gen is taken up by the sulphate before it reaches the copper plate. In the potassium bichromate cell, zinc and carbon plates are immersed in a solution of potassium bichromate in dilute sulphuric acid. Chromic acid is formed by the action of the sulphuric acid on the bichromate, and this oxidizes the hydrogen to form water.

A so-called dry cell or dry battery is not dry, but contains a damp chemical paste, closely sealed against evaporation, in place of the liquid of the wet cells.

Static electricity is comparable in its properties to a tank of water whose outlet pipe is stopped. The water is at rest, but is under pressure from its containing walls. So static electricity is at rest, but under tension or pressure. Dynamic electricity is comparable to water flowing through a pipe. The rate and strength of flow depend upon the head or pressure of water and the frictional resistance offered by the pipe. The unit of strength or rate of flow of an electric current is termed an ampère; the unit of pressure or electro-motive force is termed a volt; the unit of resistance an ohm. A pressure of one volt against a resistance of one ohm produces a current of one ampère; or as expressed in the terms of an equation: Voltage = ampèrage × resistance, which is called Ohm's law. A coulomb is the quantity of electricity conveyed by one ampère in one second. A watt is the power exerted by one ampère with a pressure of one volt. A milliampère is one-thousandth of an ampère.

If a number of galvanic cells are united with one another in such a way that the positive pole of one is connected with the negative pole of the next, and so on, the cells are said to be grouped in series. By such a method of grouping, the voltage is increased in proportion to the number of cells. If all the positive poles are joined on one side and all the negative poles on the other, the cells are said to be grouped in parallel or multiple arc. By this method of grouping the ampèrage is increased in proportion to the number of cells, the voltage remains that of only one cell, and the resistance becomes that of one cell divided by the number of cells.

A storage battery consists of two electrodes of the same metal, such as lead, surrounded by an electrolytic fluid, such as dilute sulphuric acid, through which a constant current has been sent. During the passage of the current (charging of the battery), the positive lead plate becomes covered with brownish peroxide of lead and the negative plate with finely divided, spongy metallic lead. When the two terminals of the charged cell are subsequently connected, a current flows in the opposite direction to that of the charging current, that is, from the spongy lead through the fluid to the brownish plate and back through the outside circuit.

Faradic Electricity.—The production of a faradic induced, or alternating current is shown in the following diagram (Fig. 51).

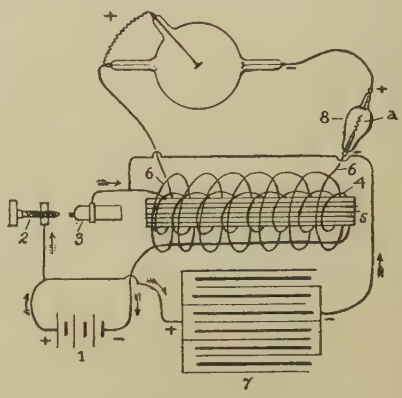


Fig. 51.—Faradic apparatus.

One is the battery of cells from which a galvanic current is obtained. Two is an adjustable screw with a platinum tip. Three is a piece of soft iron, also with a platinum tip opposite the screw, which is pulled against 2 by means of a strong brass spring. Four is a coil of coarse wire, the so-called primary coil, surrounding the iron bar or core, 5, and carefully insulated from it. Six is a secondary coil of fine wire, carefully insulated. The current from the battery passes in the direction indicated by the arrows and magnetizes the soft iron core, 5, which attracts the iron hammer, 3, away from its contact with the screw, 2, and thus breaks the circuit. The core thereby becomes demagnetized, 3 springs back into contact with 2, and remakes the circuit, and so on. At every increase and decrease in the strength of the current flowing through the primary wire, and at every make and break of this current, a secondary current is induced in the surrounding coil of fine wire, and the more sudden the change the greater the strength of the induced current, the "break" current being the stronger. At the instant when the primary current begins or increases in strength, a weak current in the opposite direction is generated in the secondary wire; at the instant when the primary current stops or decreases in strength, a strong current in the same direction is generated in the secondary. No current is induced in the secondary wire

so long as the primary current flows steadily. The secondary or induced (faradic) current alternates in direction as rapidly as the primary circuit is interrupted and made. The effect of such an arrangement of coils is to change a current of relatively low potential and high ampèrage to a current of relatively high potential and correspondingly low ampèrage.

The so-called high-tension transformer (Fig. 71) is an induction coil. The voltage of the secondary current is as many times greater than the voltage of the primary current as the number of turns of wire in the secondary exceed those in the primary. The ampèrage at the same time is correspondingly reduced.

The so-called sinusoidal current is an alternating current with a gradual change of strength and direction.

The Dynamo and Electric Motor.—When a coil of wire (Fig. 52*a*) is made to revolve so as to cut lines of force between the poles of a magnet, an electric current is generated in the coil, which is in the direction shown by the arrows when the upper wires are coming toward the observer, and in the opposite direction when the wires are rotating through the other half turn. If the ends of the coil are connected with two rings which rotate with the coil, and these rings are made to press against two springs or brushes connected with an external circuit, an alternating current is produced in this circuit.

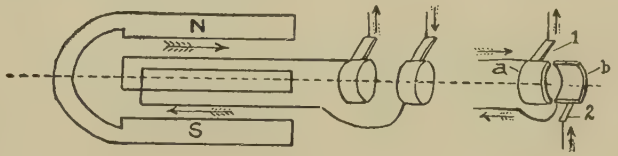


Fig. 52*a*.—Dyamo and electric motor.

Fig. 52*b*.

If the ends of the coil are connected with the two separated halves of a metal cylinder (Fig. 52*b*) rotating with the coils, and the half, a, connects with the spring, 1, during the half revolution that it is, say, positive, and with the spring, 2, during the second half revolution when it is negative, the alternating current in the coil is thereby rendered unidirectional in the external circuit. Such a device is called a commutator.

Part of the electricity generated by a dynamo is made to traverse a coil surrounding the magnet, thereby increasing its magnetism.

A dynamo is a machine by which rotary motion between the poles of a magnet is made to generate electric currents. If the action is reversed, and an electric current is sent through the coils of wire between the magnetic poles, it sets up rotary motion in the coils. Such a reversed dynamo is called an electric motor.

When it is desired to convert the high-voltage street current into a current of, say, 110 volts, either direct or alternating, for medical purposes, it may be made to run an electric motor which in turn operates a dynamo. When the two are mounted on the same axle and revolve together, the combined apparatus is called a motor generator.

Medina Worm.—See Dracontiasis, in Part 5, Skin Diseases.

Mediterranean Fever.—See Malta Fever.

Megacolon.—Gr. *μέγας* large + *κώλον* colon. See Colon, Dilatation of the.

Malæna.—Gr. *μελαίνα* black bile. See Hemorrhage, Intestinal.

Melanuria.—Gr. *μέλας* black + *οὖρον* urine.

Causes of Black or Dark Colored Urine.—Marked chronic jaundice; hæmaturia; hæmoglobinuria and hæmatoporphyrinuria; melanotic tumors; ochronosis; indicanuria; certain ingesta, *e.g.*, black cherries, plums, bilberries, resorcin, carbolic acid, naphthalene, creosote, and the salicylates.

Melena.—See Melæna.

Membranous Colitis.—See Colitis, Mucous.

Ménière's Disease.—See Ear Diseases.

Meningeal Hemorrhage.—See Apoplexy; Concussion, etc., of the Brain; Hæmatorrhachis; and Hemorrhage, Intracranial in the New-Born.

Meningitis, Acute Cerebrospinal.—Gr. *μῆνιγξ* membrane + *-ιτις* inflammation. The common symptoms of acute meningitis are as follows—severe headache, neuralgic pains, and general hyperæsthesia; vomiting; retracted abdomen; usually pyrexia; rigidity of the neck and extremities and retraction of the neck; flexion of the joints; irritability, delirium, grinding of the teeth, muscular twitching, perhaps convulsions; localized paralyses, *e.g.*, strabismus, ptosis, slight facial paralysis, etc.; stupor, coma.

One must remember that simple congestion of the meninges, without inflammation (meningism) may produce the above symptoms. Perform lumbar puncture for diagnostic purposes (see under Cerebrospinal Fever for the technique of performing lumbar puncture,

and of preparing and staining smears). The presence of turbidity is pathognomonic of meningeal inflammation. In tuberculous meningitis, however, the fluid is usually clear, and contains a predominance of lymphocytes. An excess of lymphocytes is said to be indicative of chronic cerebrospinal irritation. It occurs also in poliomyelitis, syphilis, brain tumor, venous thrombosis, late meningococcus infection, dementia paralytica, and tabes. Polymorphonuclear leucocytes predominate in other forms of acute meningitis than the tuberculous. Stained smears from the sediment of the centrifugalized spinal fluid (see under Cerebrospinal Fever) and cultures should be made. Organisms are not always found; but an excess of leucocytes is significant. The tubercle bacillus may be demonstrated by the inoculation of a guinea pig with the centrifugalized fluid. The tuberculin test is also of service.

Prognosis.—This is very bad, except in epidemic cerebrospinal fever (*q.v.*). Death usually occurs in about two weeks or less; in tuberculous meningitis, about six weeks. Very rare cures have been reported, however, in tuberculous meningitis.

Etiology.—Bacterial causes are the meningococcus (see Cerebrospinal Fever), tubercle bacillus, pneumococcus, streptococcus, staphylococci, bacillus influenzæ, spirochæta pallidum; and rarely the following: Friedlander's bacillus pneumoniæ, bacillus typhosus, bacillus coli, gonococcus, bacillus mallei, and bacillus pestis.

All varieties of meningitis, except that caused by the meningococcus, and sometimes the pneumococcus, are practically always secondary and not primary affections. The primary etiological factors are cranial traumatism, acute infectious diseases (erysipelas, septicæmia, pneumonia, rarely scarlet fever, measles, influenza, typhoid fever, smallpox, mumps, gonorrhœa, diphtheria, anthrax, actinomycosis, etc.), otitis media, nasopharyngeal disease and sinusitis, acute myelitis, myelomalacia, malignant disease, sunstroke, alcoholic and other intoxications. Meningitis also occurs as a terminal infection in chronic nephritis, heart disease, gout, arteriosclerosis, and the wasting diseases of children.

Treatment.—Enjoin absolute rest in a quiet, darkened room, and great gentleness in handling the patient. Open the bowels with calomel, followed by a saline, and secure a daily bowel movement thereafter, by means of salines, if necessary, for the purpose of relieving meningeal congestion. Clip the hair, and apply an ice-cap to the head, and if deemed advisable, an ice-bag to the spine. Concentrated liquid nourishment should be administered every two or three hours, and water given freely. Gavage (see under Dyspepsia and Inanition) is sometimes required. Guard against bed-sores (*q.v.*).

For the relief of pain, irritability, restlessness, and delirium, employ every two, three, or four hours, hot packs or hot baths at a temperature of 100° to 110° F., for five to twenty-five minutes at a time, with an ice-cap to the head during the bath. Trional, chloral, the bromides, pyramidon, phenacetin, antipyrin, codeine, and morphine may be used with discretion when deemed advisable. (For drug formulæ, etc., see Part 11.)

Potassium iodide, the perchloride of iron, and corrosive sublimate (gr. $\frac{1}{13}$ to $\frac{1}{6}$, hypodermically, each day) for adults, and unguentum Credé for children, are recommended in large doses. Hexamethylenamin or urotropin is supposed to liberate formaldehyde in the cerebrospinal fluid. It is given in doses of gr. x every four hours, even to young children; to adults, ʒi a day. But urotropine is said to liberate formaldehyde only in an acid medium, and helmitol (*q.v.* in Part 11) has been discredited.

Lumbar puncture is of service as a therapeutic measure, both for drainage and for the relief of pressure symptoms (headache, etc.).

Meningitis secondary to otitis media, sinusitis, and traumatism, requires surgical treatment.

See Cerebrospinal Fever for the special treatment of this variety of meningitis.

Meningitis, Basilar.—See Tuberculous Meningitis, and Tuberculosis, Acute Miliary.

Meningitis, Chronic.—The symptoms of chronic meningitis are similar to those of acute meningitis (*q.v.*), but they are chronic, and pyrexia is not apt to be present. A circumscribed collection of subarachnoid fluid may press upon the cord producing symptoms of tumor.

The commonest cause of chronic meningitis is syphilis; and the next most frequent cause, tuberculosis. Other causes are chronic alcoholism, traumatism, compression of the cord, exposure, overexertion, and the causes of acute meningitis (*q.v.*).

A chronic thickening of the meninges, especially in the cervical region, sometimes occurs, causing compression of the nerve roots and cord, with the following symp-

toms: neuralgic nerve-root pains, followed by paralyses in the arms, and finally spastic paraplegia. The affection is called hypertrophic cervical pachymeningitis, and is commonly due to syphilis, sometimes, perhaps, to traumatism, exposure, or overexertion. It is curable. Examine the neck for Pott's disease, in order to exclude tuberculous meningitis.

Treatment.—Prescribe a nutritious diet, tonics, good hygiene, hot baths, and massage. Employ analgesics for pain, and the thermocautery for pain and stiffness. Mercury and iodide are recommended for non-syphilitic as well as for syphilitic cases. For the hypertrophic pachymeningitis, give iodide in increasingly large doses.

Meningitis, Serous.—See under Hydrocephalus.

Meningocele, Cerebral.—Gr. *μηνιγξ* membrane + *κήλη* tumor or hernia. A congenital hernial protrusion of the brain membranes through an opening in the skull. If the meningeal sac contains a portion of the brain, the hernia is called an encephalocele. If the latter contains a cavity filled with fluid communicating with the lateral ventricles, the anomaly is called a hydrencephalocele (Gr. *ὕδωρ* water + *ἐγκέφαλος* brain + *κοῖλος* hollow).

A meningocele is fluctuant and translucent, and sometimes pulsates; it swells when the child cries, and slowly increases in size after birth. An encephalocele is neither fluctuant nor translucent, but it always pulsates. Both these tumors are usually reducible, but marked pressure symptoms are thereby produced, *e.g.*, slowing of the pulse, respiratory disturbance, vomiting, convulsions, unconsciousness, etc. A hydrencephalocele is fluctuant, it may be somewhat translucent, but it is irreducible, and compression rarely causes symptoms.

Treatment.—Most cases die within a few weeks from meningitis, convulsions, or rupture. A very few recover spontaneously and equally few as a result of operation.

In meningocele the sac may be closed at its pedicle and removed, care being taken to avoid any sudden loss of cerebrospinal fluid. Chronic hydrocele, however, often follows.

In encephalocele, if small, the cerebral protuberance may be reduced or amputated, and the defect in the skull closed by a flap of bone and periosteum, or of periosteum alone, or of scalp alone.

A hydrencephalocele should merely be protected by a pad.

Meningocele, Spinal.—See Spina Bifida.

Meningomyelitis.—See Myelitis.

Meningomyelocele.—Gr. *μῆνιγξ* membrane + *μυελός* marrow + *κήλη* tumor. See Spina Bifida.

Meralgia Paræsthetica.—Gr. *μηρός* thigh + *ἄλγος* pain; *παρά* beside + *ἀίσθησις* sensation. An affection of the external cutaneous nerve of the thigh, characterized by burning, tingling, and stabbing pains, or perhaps only numbness, and tenderness or anæsthesia, over the outer surface of the thigh, relieved by lying down and by flexion of the thigh. The anterior crural nerve supplying the front of the thigh is in rare instances the nerve affected.

Etiology.—Traumatism; prolonged sitting, standing, walking, or climbing; pressure of corsets; flat foot; intermittent claudication; pregnancy; neuritis; tumor; alcohol; gout; diabetes; obesity; syphilis; tabes; general paresis; hæmatomyelia.

Treatment.—Attend to the cause. Useful palliative measures embrace massage, electricity, the Paquelin cautery, and the application of a 10 per cent. alcoholic solution of menthol. Ionic medication may be of service (see under Inflammation).

As a last resort, the nerve may be resected as it passes under Poupart's ligament just internal to the anterior superior spine of the ilium.

Metabolism.—Some Aspects of Faulty Metabolism and Impaired Kidney Function as revealed by Blood and Urine Analysis.

The protein elements of the food are digested in the stomach and intestine into proteoses, peptones, and finally various amino-acids containing the group NH_2. The latter are absorbed into the portal circulation and are carried throughout the body, where they are utilized to build or repair tissue, furnish energy, and produce ammonia, the latter serving to maintain the alkalinity of the blood by combining with and neutralizing acids, *e.g.*, carbonic, phosphoric, lactic, and oxybutyric acids. In the liver some of the NH_2 groups are converted into urea; but in acidosis more of these groups go to form ammonia which combines with the acids and is excreted as ammonium salts in the urine. An early sign of acidosis, therefore, is an increase of urinary ammonia (see Urinalysis). This often occurs some time before acetone bodies appear in the urine.

Amino-acids and their disintegration products, urea and ammonia, are derived not only from the food, but also from disintegrating tissue protein. The nucleoprotein contained in cell nuclei disintegrate in the body into the purin bodies—uric acid, creatin and creatinine. Uric acid is derived also from food nucleoprotein, but creatinine,

formed from creatin, is derived entirely from body-tissue nucleins.

Urea, ammonia, uric acid, creatin and creatinine are the most important of the non-protein nitrogenous constituents of the body, and their quantitative estimation in the blood and urine furnishes valuable information in regard to metabolism and the kidney function. Normally the blood contains, per 100 c.c., 25 to 35 mgms. of total non-protein nitrogen, 12 to 20 mgms. of urea nitrogen (30 to 50 per cent. of the total N. P. N.), and 1 to 2.5 mgms. of creatinine nitrogen. An increase of the latter of over 5 mgms. per 100 c.c. means an early fatal outcome. In renal disease the non-protein nitrogenous constituents of the blood are increased; but not to any extent in chronic renal congestion. A marked retention of non-protein nitrogen (the blood urea alone is usually estimated) renders a case a bad surgical risk. In renal disease chlorides are also retained (see Urinalysis).

Urinary tests should be carried out with the patient on a standard diet, such as that of Mosenthal, for about three days:

Breakfast, 8 A.M.	Dinner, 12 Noon	Supper, 5 P.M.
Oatmeal, boiled, 100 grams.	Meat soup, 180 c.c.	Eggs, two, any style.
Sugar, 1 to 2 teaspoonfuls.	Beefsteak, 100 grams.	Bread, 2 slices, 30 grams each.
Milk, 30 c.c.	Potato, baked, mashed, or boiled.	Butter, 20 grams.
Bread, two slices, 30 grams	Green vegetables as desired.	Tea, 180 c.c.
Butter, 20 grams.	Bread, two slices, 30 grams each.	Sugar, 1 teaspoonful } 200 c.c.
Coffee, 160 c.c.	Butter, 20 grams.	Milk, 20 c.c.
Sugar, 1 teaspoonful } 200 c.c.	Tea, 180 c.c.	Fruit, stewed, fresh, 1 portion.
Milk, 40 c.c.	Sugar, 1 teaspoonful } 200 c.c.	Water, 300 c.c.
Milk, 200 c.c.	Milk, 20 c.c.	Salt, 2.3 grams.
Water, 200 c.c.	Water, 250 c.c.	
Salt, 2.3 grams.	Tapioca or rice pudding, 110 grams.	
	Salt, 2.3 grams.	

Weigh all food, water and salt not taken. The above dietary contains approximately 13.4 gms. of nitrogen, 8.5 gms. of salt, and 1760 c.c. of fluid. Have the patient empty the bladder at 8 A.M., 10 A.M., 12 M., 2 P.M., 4 P.M., 6 P.M., 8 P.M., and again at 8 A.M.

Following is the normal response to the Mosenthal diet:

1. A variation in the s.g. of the two-hourly urines of usually 10 points or more.

2. Daily intake and excretion of fluid, salt and nitrogen approximately equal.

3. A night urine of s.g. 1.016 or 1.018 or higher, nitrogen above 1 per cent., and amount 400 c.c. or less, regardless of the quantity of fluid ingested or of urine voided during the day.

The following response indicates impairment of kidney function:

1. Fixation of the s.g. and the two-hourly quantity of urine excreted.

2. Daily volume of urine equal to or greater than the fluid intake.

3. Nocturnal polyuria (over 400 c.c.); or a nocturnal excretion normal in amount but with low s.g. and nitrogen percentage.

4. Salt and nitrogen retention.

The normal concentration of chlorides in the urine is 1.8 per cent. In lobar pneumonia and cardiac dropsy there is a diminished excretion of chlorides but no blood retention as in nephritis. The normal concentration of chlorides in the blood is 5.62 to 6.25 gms. per liter.

In fevers (due to protein destruction) and during the absorption of an inflammatory exudate (as in the resolution stage of pneumonia and absorption of pleural and peritoneal effusions) the urinary urea is increased. In the latter condition the chlorides are also increased.

In liver disease the urea is markedly diminished in both the blood and urine and the ammonia excretion is correspondingly high, because little ammonia is converted into urea by the damaged liver. In nephritis the urinary excretion of urea is diminished, whereas the blood urea is increased owing to retention. In eclampsia the rise of blood N. P. N. is seldom marked as it is in uræmia, owing to the diminished formation of urea by the diseased liver.

Blood urea is quantitatively estimated as follows: Reagents used: Soybean or Jack bean urease (an enzyme which converts urea into ammonium carbonate, acting best in a perfectly neutral solution), 10 per cent. solution (see below).

N/100 H_2SO_4.

N/100 NaOH.

Neutralizing phosphate solution containing 5 grams KH_2PO_4 and 1 gram Na_2HPO_4 per liter (used to prevent alkalinity in tube A, Fig. a, from the formation of ammonium carbonate, which would check the action of the urease).

Sodium alizarin sulphonate solution, 1 per cent.

Potassium carbonate saturated solution (90 grams to 100 c.c. water).

Caprylic alcohol.

Technic.—Into a large test tube, A, Fig. a, introduce 3 c.c. of neutralizing phosphate solution and 1 c.c. of 10 per cent. urease solution. Add 3 c.c. of blood (drawn from a vein into a vessel containing about 0.1 gram of finely powdered potass. oxalate for 20 c.c. of blood, to prevent clotting). Add 4 or 5 drops of caprylic alcohol to prevent foaming, stopper, and allow to stand for 20+ minutes to ensure complete action of the enzyme. Then pass the air current for thirty seconds in order to drive over into B a small amount of ammonia which appears in A as a result of the decomposition of the urea. Now add 10 c.c. of saturated potass. carbonate solution to liberate ammonia, and conduct the latter by aëration into tube B (containing 15 c.c. of N/100 H_2SO_4, 10 c.c. of water, and one drop each of alizarin solution and caprylic alcohol), until all the ammonia has been driven over into B (5 to 60 minutes, according to the rapidity of the pump). Then titrate the excess acid in B with N/100 NaOH. Each c.c. of acid neutralized by the ammonia represents 0.1 gram of urea or 0.0466 gram of urea nitrogen per liter of blood. The normal is ordinarily about 0.2 to 0.3 gram of urea per liter.

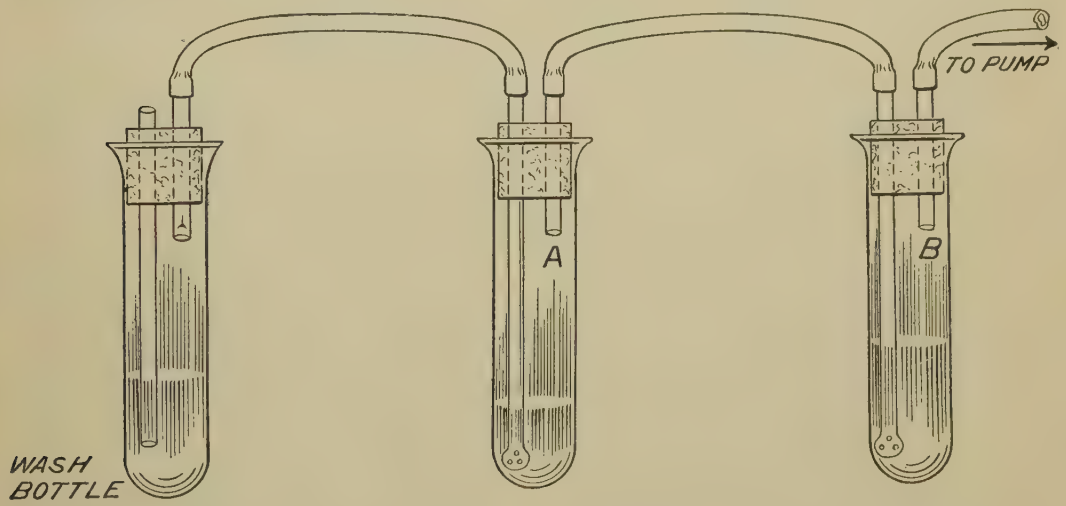


Fig. 53c. Aëration apparatus.

Urease as obtained from the manufacturers must be tested for activity as follows: Place 5 c.c. of a solution consisting of dibasic potassium phosphate (K_2HPO_4) 43 grams, diacid potass. phosphate (KH_2PO_4) 34 grams, and urea 60 grams, in water up to 1000 c.c., in the tube A, Fig. a, and raise the temperature exactly to 20° C. in a water bath. Add 1 c.c. of 10 per cent. urease solution also at 20° C., and allow to stand at this temperature exactly 15 minutes. Then add 6 or 7 grams of potass. carbonate and aërate into 30 c.c. of N/10 acid. The number of c.c. of acid neutralized should be at least 8.

Sugar Metabolism, Etc.—In the liver, glucose ($C_6H_{12}O_6$, a monosaccharide) is converted into glycogen ($[C_6H_{10}O_5]_n$, a polysaccharide), which is stored in the liver and retransformed into glucose as required by the body. The liver stores fats and possibly also proteins. It is known to retain alien protein and also metals, alkaloids and toxines, thus exerting a protective action against poisons. It synthesizes amino-acids and also deaminizes amino-acids, and forms urea from ammonium salts. It forms ethereal sulphuric acids and conjugated glycuronic acids from the phenols produced in intestinal putrefaction. The bile salts are formed from protein and the pigments from hæmoglobin.

A liver poor in fat is rich in glycogen, and vice versa. The glycogen of the liver increases on feeding carbohydrates and diminishes after work, after starvation, and after the injection of adrenalin. Adrenalin acts by activating the liver diastase. In Bernard's piqûre experiment there is an increased formation of adrenalin due to sympathetic stimulation, and this accounts for the hyperglycæmia. Stimulation of the splanchnic nerve also causes an increased production of adrenalin.

In diabetes the organs and tissues are poor in glycogen, showing, possibly, that glycogen is too abundantly transformed into glucose, or else that glucose is not converted

into glycogen. The conversion of glycogen into glucose is brought about by a diastatic ferment which is activated by adrenalin. The thyroid secretion accelerates the secretion of adrenalin (by stimulating the sympathetic?); whereas the pancreatic internal secretion retards both the thyroid and adrenal secretions.

Sugar in the urine means increased blood sugar or diminished power of the kidneys to hold sugar back (as in phloridzin diabetes). In the latter condition the blood sugar is not increased but rather diminished. In diabetes complicated with nephritis, sugar excretion may be diminished owing to impaired kidney function, while the blood sugar is increased. The normal sugar content of the blood is from 0.08 to 0.12 per cent.

The Lewis and Benedict Quantitative Test for Blood Sugar.—**Equipment.**—1. Sodium Picrate Solution: Picric acid, dry, 36 gms., dissolved in 500 c.c. of 1 per cent. NaOH solution, plus 400 c.c. of hot water; the solution cooled and diluted to 1 liter.

2. Na_2CO_3, anhydrous, 20 gms., dissolved in water up to 100 c.c.

3. Standard Picramic Acid Solution.—Glucose, pure, 0.64 mg., plus distilled water, 4 c.c., plus the above picrate solution, 4 c.c., plus the above carbonate solution, 1 c.c.; the mixture heated in boiling water for ten minutes, and then diluted to 12.5 c.c. This solution matches the color of 0.64 mg. of glucose treated as described and diluted to 12.5 c.c.

4. Ostwald pipette.

5. Potassium oxalate, powdered.

6. Large test-tube graduated at 12.5 c.c. and 25 c.c.

Technic.—Draw into the Ostwald pipette, containing a little powdered potass. oxalate, 2 c.c. of the blood to be tested, and transfer it to the graduated test-tube. Rinse out the pipette twice with distilled water and add the washings to the test-tube. After about two minutes, the blood being completely laked, add the sod. picrate solution to the 25 c.c. mark (12.5 c.c. mark if 1 c.c. of blood were drawn), using several drops of alcohol to dispel foam, if necessary, and shake thoroughly. After two minutes or longer filter through a dry filter and collect the filtrate in a dry beaker. Measure exactly 8 c.c. of the filtrate into the cleansed graduated test-tube and add 1 c.c. of the 20 per cent. sod. carb. solution. Plug the test-tube with cotton and immerse in boiling water for 10 minutes or a little longer (not over 30 minutes). Filter if desired. Cool under running water and dilute to 12.5 c.c. or to 25 c.c., depending on the depth of color. Compare within half an hour, in a colorimeter, with the standard solution, the latter being set at a height of 15 mm.

$$\frac{\text{Reading of standard}}{\text{Reading of unknown}} \div 10 = \left\{ \begin{array}{l} \text{percentage of} \\ \text{sugar in the} \\ \text{original blood.} \end{array} \right.$$

The final figure is multiplied by two if the final dilution is made to 25 c.c. instead of 12.5 c.c.

Acidosis (*q.v.*) is due ordinarily to the incomplete combustion of fats resulting from a relative deficiency of carbohydrates, the fats being burned up, as it were, in the carbohydrate fire. One molecule of carbohydrate is required to completely burn up three of the higher fatty acids into non-toxic products. Acetone bodies (acetone, diacetic acid, oxybutyric acid) do not appear until the liver is empty of its glycogen.

The acidosis, however, which sometimes occurs in nephritis, is due to the retention of acid phosphates, and no acetone bodies may be found in the urine. In hepatic disease, too, as in pregnancy toxæmia and delayed chloroform poisoning, marked acidosis may occur with increased urinary excretion of ammonia and lactic acid, but little of the acetone bodies. The liver cells are alkaline during life, acid after death, due to the formation of lactic and other organic acids.

Metatarsalgia.—See Part 10, Orthopædics.

Mercury Poisoning.—**I. Acute Poisoning** (see under Poisoning).

II. Chronic Poisoning.—Chronic mercury poisoning occurs in workers in mercury mines and smelters, thermometer, barometer, and felt hat factories, etc., and is characterized by tremor, especially intense under emotion, often ptyalism and gingivitis, and a tendency to a subjectively embarrassing nervousness.

Prophylaxis.—Thorough ventilation; thorough cleanliness; use of rubber gloves, hoods, and adequate covering of mercury containers.

Treatment.—Potassium iodide; frequent hot baths; open air exercise; abundant diet; abstention from alcohol and other excesses; abundance of fluids.

Recovery is the rule.

Meteorism.—Gr. *μετεωρίζειν* to raise up. See Tympanites.

Methæmoglobinæmia. — Methæmoglobin + *αἷμα* blood. See Cyanosis; and Intestinal Intoxication.

Micturition.—L. *micturir'e*, to urinate. See Urination.

Migraine; Hemicrania.—Fr. *migraine;* Gr. *ἡμι* — half + *κρανία* skull. Periodical headache, localized, general, unilateral, or bilateral, lasting for minutes, hours, or days,

usually associated with or preceded by flashes and specks of light, scotomata or hemianopia, mental confusion, dizziness, perhaps aphasia (when the hemianopia is on the right side in right-handed persons), paræsthesias and anæsthesias, chilliness, depression, pallor (followed by flush when the headache begins), etc., and often terminating in nausea and vomiting.

Transient ophthalmoplegia and other palsies may occur, due without doubt to arteriospasm. Prodromal symptoms sometimes occur without subsequent headache. The pain is increased by afferent impulses, such as light, noise, etc.

The affection is probably of vaso-motor origin, *i.e.*, due to a paroxysmal arteriospasm. It usually disappears after middle age.

Etiology.—Hereditary predisposition; reflex irritation, due to eyestrain, adenoids, nasal disease, menstruation, dysmenorrhœa, constipation; dietary faults (alcohol, excess of fats or of carbohydrates, tea, coffee, certain articles of food in some individuals; gastro-intestinal intoxication; missing of a meal); physical and mental weariness; worry; arteriosclerosis; plumbism; gout; obesity; chronic nephritis; malaria; tabes; general paresis; brain tumor or gumma; shock; exposure to cold; bad air; tobacco. See Headache, for all its causes.

Treatment.—During an attack, put the patient to bed in a quiet, dark room, with hot bottles to the feet, and either cold or hot applications to the head. Menthol may be rubbed on the forehead.

Prescribe an analgesic, viz.,—

Phenacetin or antipyrin, gr. v–x, with salol or aspirin, gr. v–x, in powder form, repeated if necessary.

Flext. cannabis indicæ, gtt. i, every half to one hour, until relieved (2 to 10 drops, even ʒi, may be required). It is said to be the best remedy.

Flext. gelsemii, ♏i–v, every four hours, as required.

Codeine, gr. ¼ to ½, every three or four hours.

Morphine, gr. ⅛ to ¼, with atropine, every three or four hours.

℞ Ammonii bromidi..... gr. xx
Caffeinæ citratis..... gr. i
Antipyrinæ..... gr. x
Spiritus ammoniæ aromatici.... gtt. x–xx
(Sachs.)

Other relief measures include a very hot bath, a hot mustard foot bath, a mustard poultice (Part 11) or dry cup (*q.v.*) to the back of the neck, vibratory massage, and galvanism (see Medical Electricity.)

Soon after giving the analgesic, administer a brisk saline purge. A copious hot saline enema is of value.

℞ Sodii phosphatis exsiccati..... ʒiv
Sodii sulphatis exsiccati..... ʒx
Sodii salicylatis..... ʒii
Mix, triturate, and cork tightly.
Sig.—One teaspoonful in a large tumbler of hot or cold seltzer water, on rising. (Starr.)

After the attack is over, examine into the cause. Enjoin good hygiene, adequate rest and exercise, fresh air day and night, regular hours of eating and sleeping, rest before and after eating, regular bowel activity, a daily warm bath in a warm room followed by a cold spinal douche, a glass of water containing about a quarter of a teaspoonful of sodium bicarbonate (or a glass of Vichy) one hour before each meal, and a plain bland diet. Cases associated with obesity may be cured by dieting (see Obesity). Such tonics as arsenic and nux vomica may be of benefit in appropriate cases (see Part 11 for drugs.)

Sachs recommends as a preventive the following:

℞ Sodii salicylatis..... gr. v–x
Sodii bromidi..... gr. x–xx
Aquæ..... ʒss–i
M. Sig.—One or two tablespoonfuls, well diluted, t.i.d.p.c.; or aspirin or novaspirin, gr. xv, three or four times a day.

Mikulicx's Disease.—A chronic, painless, symmetrical enlargement of the lachrymal and salivary glands, of unknown cause.

Employ the X-rays (*q.v.*) together with the combined administration of arsenic and iodide (see Part 11) in full doses.

Miliary Fever; Sweating Sickness.—L. *miliar'is*, like a millet seed. An acute infectious epidemic disease of Europe, possibly transmitted by the fleas of field-mice, characterized by fever of sudden onset, marked sweating, rapid heart action and palpitations, respiratory distress, insomnia, epigastric pain, and constipation, with the appearance on the third or fourth day of an erythemato-papulo-vesicular or sudaminal rash, followed by a slow recovery, frequently interrupted by relapses. Desquamation follows the rash. Rapid death sometimes occurs.

Treatment.—Isolate the patient (see Disinfection). Put him to bed between blankets in a well-ventilated room. See that the bed-covering is light and that the body is kept dry. The diet should be liquid, and water should be drunk freely. Cool baths, sponging, or packs, are indicated for high

fever, nervous symptoms and insomnia (see Fever); morphine for tumultuous heart action; the ice-bag or mustard plaster for pain.

Prescribe tonics during convalescence, *e.g.*, iron, arsenic, strychnine (see Part 11).

Infected houses should be quarantined for at least two weeks, and then fumigated (see Disinfection.)

Miliary Tuberculosis.—See Tuberculosis, Acute Miliary.

Milk Poisoning.—See Poisoning.

Milk Sickness.—(Called "The Trembles" in cattle.) A rare serious disease, caused by the ingestion of the milk, butter, cheese, or flesh of infected cattle, and characterized by drowsiness, sometimes irritability, anorexia, persistent vomiting, swollen tongue, sweetish odor of the breath, great thirst, extreme constipation, little or no fever, sometimes convulsions. Convalescence is slow. Death often occurs.

Treatment.—Put the patient to bed, and purge freely with calomel followed by salines (see Part 11). Employ alcoholic stimulation, when required.

Give tonics, such as the elixir ferri, quininæ, et strychninæ phosphati, ℥i, well diluted, t.i.d., during convalescence.

Milroy's Disease; Persistent Hereditary Œdema of the Legs.—See under Œdema.

Mimic Spasm.—See Habit Spasm.

Mind-Blindness.—See Aphasia.

Mind-Deafness.—See Aphasia.

Morphinism.—The morphine habit is best treated by isolation in an institution. The drug should not be withdrawn abruptly, but it should be gradually reduced, usually by one-half or one-third each day. For the first seven to ten days, the patient is perhaps best in bed. Free catharsis is essential. Castor oil, ℥ss, t.i.d., for the first seven to ten days is advised (Lambert). For heart weakness, administer digitalis (Part 11) every four hours, or aromatic spirits of ammonia; but return to morphine if collapse occurs. For the relief of depression, nervousness, and insomnia during the withdrawal, give the bromides, as much as ℥ii–iv if necessary, in twenty-four hours, well diluted, together with ergot (Lambert; see Alcoholism). Ergot reduces the cerebral venous congestion which morphine produces. Hyoscin may be required. A warm bath followed by a rub-down and a warm bed relieves nervousness. The cold pack is recommended for insomnia. Electricity (*q.v.*) and massage may be of service.

Feed the patient every two hours with beef juice, broths, koumyss (Part 11), and eggs. Give a carbonated water (Vichy or Apollinaris) for nausea.

℞ Tincturæ capsici . . . . ℥ii–iv (ɱx–xx per dose)
Tincturæ zingiberis . . ℥ii–ℨiss (ɱx–℥i per dose)
Tincturæ cinchonæ compositæ, q.s., ad. ℥iv
M. Sig.—Two teaspoonfuls in water, 3 to 4 times a day, as a tonic and digestive.

Strychnine is said to intensify the abstinence symptoms; but after all morphine is out of the system, it should be given in full doses (see Part 11) as a general stimulant and tonic.

The patient must be constantly watched so that he can not procure morphine or commit suicide, and after convalescence he should be watched to prevent a relapse.

Try to correct the cause of the habit, *e.g.*, neuralgia, insomnia, etc.; but the usual cause is the euphoria which the drug affords.

Motor Nerves of the Eyeball.—The Third or Oculomotor Nerve supplies the levator palpebræ superioris muscle, the superior, internal, and inferior recti, the inferior oblique, the ciliary muscle, and the constrictor iridis. Paralysis of all these muscles results in external strabismus, diplopia, ptosis, loss of accommodation, and loss of the pupillary reaction to light.

The Fourth or Trochlear Nerve supplies the superior oblique muscle. Paralysis of this muscle results in difficulty in looking downward and inward, and diplopia on looking down.

The Sixth or Abducens Nerve supplies the external rectus muscle, paralysis of which results in internal strabismus, inability to turn the eye outward, and diplopia on looking outward.

Causes of Paralysis of the Motor Nerves of the Eyeball.—A. Acute—Poisoning with alchohol, tobacco, lead, sulphuric acid, gelsemium, conium, chloral, carbon monoxide, fish, and meat; acute infectious diseases (diphtheria, influenza, measles, pertussis, herpes zoster, acute poliomyelitis, "cold," mumps, tonsillitis, basal meningitis); orbital cellulitis; tenonitis; sinusitis; fracture; basal hemorrhage or abscess; cerebral hemorrhage or injury.

B. Chronic.—Syphilis; tabes (frequently ushered in by transitory and recurrent ocular paresis); general paresis; progressive muscular atrophy (bulbar paralysis); multiple sclerosis; myasthenia gravis; hysteria; exophthalmic goitre; gout; rheumatism; diabetes; orbital periostitis; tumors; basal hemorrhage, meningitis, abscess, or aneurysm; cavernous sinus disease. (For all the causes of ptosis, see Part 6).

Causes of Spasm.—Hysteria; meningitis or other irritative affections of the brain; reflex irritation from decayed teeth or intranasal disease; tetanus; etc. (See Eye Diseases, Part 6).

Paralysis of the fourth and sixth nerves is usually due to " cold " (Theobald); to the rheumatic poison or diabetes (Wood and Woodruff); often to influenza.

Paralysis of the third nerve is usually due to syphilis or " rheumatism."

Periodic ocular paralysis with headache and often vomiting (ophthalmoplegic migraine) may be due to hysteria, to arteriospasm (see Migraine), or to a circumscribed exudate or small tumor at the base of the brain, pressing upon the nerve-tract.

Conjugate paralyses, manifested by inability to look with both eyes conjointly to the right or left, or up or down, etc., are due to lesions (usually cerebral hemorrhage, sometimes hysteria) involving the centres for the associated movements of the eyes. (In conjugate spasm, although the eyes are strongly deviated in one direction, they can be moved in the opposite direction.)

In paralytic or paretic squint, the latter increases when the eye is turned toward the paralyzed muscle, by which it is distinguished from the ordinary concomitant squint, due usually to refractive anomalies, in which the squinting eye follows all the movements of the fixing eye, maintaining always the same angle with it. Paralytic squint of long duration, however, in which the antagonist of the paralyzed muscle is contractured, can scarcely be distinguished from concomitant squint. " Indeed," says Duane, " many cases of concomitant squint are without doubt paralytic in origin." (See Part 6, Eye Diseases).

Treatment.—In acute cases with pain apply to the temple heat, counter-irritation, or the artificial Heurteloup leech. Where " cold " or " rheumatism " is the supposed cause, prescribe potassium iodide, gr. v–x, well diluted, t.i.d.p.c.; or sodium salicylate (for drug formulæ see Part 11). Diaphoresis should be encouraged by means of blankets, hot bottles, and copious hot drinks. Syphilitic cases call for specific treatment. Arsenic is recommended, no matter what the cause. In order to obviate the annoying diplopia and resulting dizziness, cover the affected eye with an opaque glass, or use prisms.

After the acute symptoms have subsided, prescribe strychnine, or nux vomica in ascending doses; and employ, if desired, the galvanic current—the cathode over the closed lid and the anode over the temple, using a very weak current, 1 to 1½ milliampères, for five minutes daily.

If the paralysis proves incurable, perform tenotomy of the opposing muscle, or advancement (resecting a large portion of the tendon) of the paralysed muscle, or both.

The Prognosis in both syphilitic and rheumatic cases is favorable.

Mountain Sickness.—The occurrence, during exertion in high altitudes, of rapid heart action, palpitation, dyspnœa, cyanosis, nausea, headache, weakness, etc., and perhaps syncope; these symptoms subsiding with rest.

Mouth, Dry.—See Aptyalism.

Mouth, Inflammation of the.—See Stomatitis.

Ulcer of the.—See Stomatitis.

Movable Kidney.—See Splanchnoptosis.

Spleen.—See Splanchnoptosis.

Mucous Colitis.—See Colitis, Mucous.

Multiple Myelomata of the Bones; Lymphadenia Ossea.—Gr. μυελός marrow + -ωμα tumor; L. *lympha*, water or lymph + Gr. ἀδήν gland; L. *os*, bone. A rare, malignant, fatal, multiple primary tumor of the bone-marrow, diagnosed by the presence of Bence-Jones' proteid (albumose) in the urine (see Urinalysis), the X-ray (*q.v.*), a negative Wassermann reaction, and the histological examination of an excised node.

Multiple Neuritis.—See Neuritis, Multiple.

Multiple Sclerosis.—Gr. σκλήρωσις hardness. Syn.—Disseminated Sclerosis; Insular Sclerosis; Fr. *Scle'rose en plaques.* A not uncommon chronic affection of the central nervous system of unknown cause, characterized anatomically by scattered areas of sclerosis in which the nerve elements are replaced by neuroglia, and clinically by the following variable symptomatology: usually motor weakness of variable severity, later paralysis; usually spasticity, often combined with sphincteric trouble, the Babinski reflex; often more or less ataxia; commonly paræsthesiæ; often volitional or intention-tremor; nystagmus; often scanning speech (slow, measured, syllabic, monotonous); often headache, vomiting, giddiness, transient amblyopia; transient diplopia due to motor nerve paralysis, scotomata, optic atrophy; sometimes choked disc. The variability of the symptoms is due to the haphazard distribution of the plaques or islets of sclerosis.

The affection should be distinguished from hysteria, paralysis agitans, cerebrospinal syphilis, general paresis, spastic paraplegia,

subacute combined sclerosis of the cord, and brain tumor.

Prognosis.—The patient may live, with remissions and relapses, for years, but he eventually becomes bed-ridden. The remissions, however, may be marked in degree, and prolonged.

Treatment.—Enjoin good hygiene, fresh air day and night, a nutritious diet, and the avoidance of muscular and mental fatigue and worry. Prescribe arsenic (see Part 11) in full dosage over a prolonged period. The prolonged use of silver nitrate and the X-rays (*q.v.*) are also recommended.

For intermittent urinary incontinence, prescribe tr. belladonnæ, ℥x in water, once, twice, or thrice a day; employ the catheter if the incontinence is due to overflow of a distended bladder.

For constipation prescribe liquid paraffin and cascara, and, if need be, in obstinate cases, daily enemata.

For troublesome reflex spasms, give sodium bromide, and belladonna, and employ hot applications, massage, and passive movements, and in severe cases of spasticity, extension by means of a pulley and weights (Stewart).

℞ Sodii bromidi..... gr. xx
Tincturæ belladonnæ..... ℥v
Aquæ, q.s., ad..... ℥ss

M. Sig.—One tablespoonful, once to thrice a day, for reflex spasms.

In acute exacerbations the patient should be put to bed. In bed-ridden cases, bedsores (*q.v.*) should be carefully guarded against; a water mattress should be used, if practicable.

The disease is aggravated following pregnancy, therefore the latter should be avoided.

Mumps; Epidemic Parotitis.—Gr. ἐπί on + δῆμος people; παρά near + οὖς ear + -ιτις inflammation. A common endemic and epidemic infectious and contagious non-suppurative parotitis, with a liability to orchitis in the male and mastitis and ovaritis in the female, occurring usually in children, in whom it is, as a rule, mild. When occurring in adults, however, it is apt to be very severe. The incubation period is from two to three weeks. A diagnostic sign that is said to be pathognomonic is tenderness just beyond the angle of the jaw, elicited on running the finger toward the angle under the mandible (Hatchcock's sign). The swelling usually subsides in about ten days. The submaxillary gland is sometimes alone affected.

Treatment.—Isolate the patient, and put him to bed on liquid or soft diet with an abundance of water; no fruits or acids. Open the bowels with calomel followed by a saline (see Part 11). The following local measures may be employed for the relief of pain and tension:—covering with cotton and oil silk; hot applications changed every twenty to thirty minutes; guaiacol, 5 per cent., in glycerine or petrolatum; ichthyol and lanolin, aa; menthol or camphor, 2 per cent., in lanolin; oil of wintergreen, alone, or 10 per cent. in petrolatum; unguentum belladonnæ; iodex (Pigm. iodi M. and J.), gentle inunction every two hours, is said to remove all swelling and signs of inflammation in about forty-eight hours.

The oily preparations may be applied three or four times daily, and the glands covered with cotton. Orchitis may be treated likewise. The inflamed testicles should be supported by means of a wad of cotton. Should the pancreas become affected, make hot applications to the abdomen.

An alkaline mouth-wash, such as Dobell's solution (*q.v.*), should be prescribed.

During convalescence, give an iron tonic. If the testicles were involved, have the patient wear a suspensory bandage on getting up.

Quarantine the patient for three weeks from the onset of the symptoms. Fumigation is unnecessary, because the causal agent is short-lived.

Muscular Abscess.—See Myositis.

Atrophies, The Progressive.—See Atrophies, The Progressive Muscular.

Dystrophy.—See Dystrophy, Progressive Muscular.

Incoördination.—See Ataxia.

Inflammation.—See Myositis.

Rheumatism.—See Myalgia.

Musculo-Cutaneous Nerve.—See Brachial Plexus.

Musculo-Spiral Nerve.—See Brachial Plexus.

Mushroom Poisoning.—See Poisoning.

Mussel Poisoning.—See Poisoning.

Myalgia; Muscular Rheumatism; Fibrositis.—Gr. μῦς muscle + ἄλγος pain; ῥευμᾰτισμός; L. *fi'bra*, fibre. Under this caption are considered the familiar affections, lumbago, dorsodynia, pleurodynia, scapulodynia, omodynia, rheumatic torticollis, etc. Myalgia may be acute or chronic. Sometimes painful œdematous indurations occur.

Etiology.—Exposure to cold and damp, especially during fatigue; strain or overuse of the muscles; influenza; gout; plumbism; arteriosclerosis; nephritis; anæmia; dia-

betes; chronic alcoholism; neurasthenia; flat-foot; varicose veins; too soft or sagging bed, causing lumbago. (See Backache, for other causes of this symptom besides lumbago.)

1. Treatment of Acute Myalgia.—If taken in the very beginning, the affection may perhaps be aborted by a hot relaxing bath and a sweat between woolen blankets, encouraged by means of quinine and salol or quinine and aspirin, aa gr. v, or Dover's powder, gr. viii–x, and copious water drinking, with one tablespoonful of Rochelle salts to open the bowels thoroughly. Useful local measures include the application of very hot flaxseed poultices; hot ironing over flannel for ten to fifteen minutes; exposure to a 32-candlepower electric light in a large parabolic reflector for about ten minutes daily; acupuncture, in lumbago, by means of a sterilized hatpin, introduced four to five inches, and allowed to remain for five to ten minutes; deep injections of nitroglycerin, atropine, or camphorated oil (see Part 11); light brushing, six to eight times, with the Paquelin cautery; galvanism for five to ten minutes, using the anodic roller electrode; dry cups (*q.v.*) left on for fifteen to thirty minutes; support of the back, in lumbago, with adhesive straps, or a well-fitting elastic binder; strapping of the muscles to procure rest, the adhesive straps, in pleurodynia, extending from the spine to beyond the sternum, and applied in overlapping layers during forced expiration; rubbing with camphorated oil, turpentine liniment, or equal parts of chloroform and belladonna liniments, followed by a covering of hot cotton and a flannel binder; application, on lint, of methyl chloride; application of menthol, or of unguentum capsici.

Analgesic Drugs Useful in Acute Cases.—Aspirin, gr. x, followed by gr. v every hour for four or five doses; antipyrine or phenacetin, gr. v–x, with salol, gr. v–x, repeated, if necessary; codeine, gr. ¼, phenacetin, gr. iii, salol, gr. v. (Croftan.)

℞ Sodii salicylatis..... gr. x–xx
Sodii bicarbonatis..... gr. v–x
Aquæ, q.s., ad..... ℥i

M. Sig.—One ounce, well diluted, every four hours.

Morphine, gr. ⅛ to ¼, hypodermically, only as a last resort.

2. Treatment of Chronic Myalgia.—Local measures: (1) Gentle vibratory or manual massage at first, and later thorough deep massage (deep kneading, stroking, and hacking), for twenty-five to thirty minutes twice daily for about four to six weeks; (2) strong faradization or the use of the sinusoidal current; (see Medical Electricity); (3) hot sulphur and mud baths (sod. sulphide, 2 oz., sod. chloride, 2 oz., sod. bicarb., 1 oz., hot water, 50 to 60 gal.) used with discretion; (4) active and passive exercises (with the Zander machines, if practicable); (5) ionic medication (*q.v.*), employing at the negative electrode, which is placed over the seat of pain, a hot 2 to 4 per cent. solution of sodium salicylate; in lumbago each electrode should measure six by eight inches; 15 to 80 milliampères of current for fifty to sixty minutes (?) is recommended. A too soft or sagging bed is a frequent cause of lumbago, which should be borne in mind.

Drugs Useful in Chronic Cases.—Guaiacol, gtt. ii–iii, in capsule or pill, p.c., increased by one drop daily up to 15 to 18 drops daily. Vini colchici, ♏xv in water, every two to four hours for 8 to 10 doses, then every four hours for three or four days until the pain is relieved or toxic effects appear, *e.g.*, nausea, vomiting, diarrhœa, and cardiac depression. Potassium iodide (*q.v.*).

℞ Guaiaci pulveris.. ℥i (about gr. 1¼ per dose)
Pulveris rhei..... ℥ii (about gr. iiss per dose)
Potassii bitartratis ℥i (about gr. x per dose)
Sulphuris precipitati ℥ii (about gr. xx per dose.)
Mellis purificati... Oi
Pulverem Myristicam..... i

M. Sig.—Shake well, and take two large teaspoonfuls night and morning. "The Chelsea Pensioner." (Yeo.)

℞ Potassii iodidi,
Potassii bromidi,
aa..... ℥iv (about gr. v–vi per dose)
Tincturæ colchici seminis..... ℥iss (about ♏xx per dose)
Syrupi aurantii corticis..... ℥ii
Aquæ, q.s., ad.... ℥vi

M. Sig.—One teaspoonful 3 or 4 times a day or oftener until the bowels are slightly acted upon. (C. G. Hollister.)

As tonics, codliver oil; nux vomica; arsenic, (Part 11).

A brief course of starvation, for five or six days or longer, with or without the free drinking of purgative waters, may be of value. A change of climate may be desirable.

Myasthenia Gravis.—Gr. *μῦς* muscle + *ἀσθένεια* weakness; L. *gravis*, severe. A rare disease of unknown cause, characterized by rapid fatigue and paresis, on exertion, of any or all of the voluntary muscles, particularly the glosso-laryngo-labio-pharyngeal muscles and the levator palpebræ (fatigue of the latter causing ptosis), with recovery during rest.

The "myasthenic reaction" is of diag-

nostic importance. It is a rapidly diminishing response to the rapidly intermittent faradic current, (see Medical Electricity) with recovery after several minutes' rest.

Prognosis.—Recoveries and relapses alternate. The disease is often fatal, but a cure is possible.

Treatment.—Enjoin muscular rest, protection against cold, and an abundant soft or finely divided diet which does not require fatiguing mastication. Strychnine in gradually increasing doses is recommended; also arsenic, and iron as tonics. The thyroid pituitary, and ovarian extracts may be tried experimentally (for all drugs, see Part 11), also alternate courses of mercury and potassium iodide (see Syphilis).

Search for a possible source of infection or intoxication.

Myatonia Congenita.—See Amyotonia Congenita.

Mycetoma; Madura Foot.—See Part 5, Skin Diseases.

Mycotic Stomatitis.—See Stomatitis.

Myelitis.—Gr. μυελός marrow + -ιτις inflammation. Myelitis, acute, subacute, or chronic, is an inflammatory affection of the gray and white matter of the spinal cord. It may be transverse, diffuse, or disseminated. In an incomplete transverse lesion, there occurs an atrophic, flaccid paralysis of the muscles enervated by the affected cord segment (see under Spinal Cord Localization), and a spastic paralysis of the muscles lower down, with the Babinski reflex. If the transverse lesion is complete, the paralysis below the lesion is also flaccid. There are sensory (root pains, anæsthesia, paræsthesia, hyperæsthesia), trophic (rapid wasting, congested skin, localized sweating, bullæ, arthritis, etc.), and sphincter disturbances, with liability to bed-sores and cystitis. These disturbances distinguish the acute ascending cases from Landry's paralysis, acute poliomyelitis, and multiple neuritis. Fever is present in the infective cases.

Etiology.—Syphilis, over-exertion, exposure to cold, and traumatism, are the commonest causes. Spinal caries, spinal cancer, and cord tumors are occasional causes. Rare causes are the infectious diseases (septicopyæmia, gonorrhœa, measles, variola, typhus fever, etc.), and toxic or degenerative agencies, viz., pregnancy, alcoholism, plumbism, ergotism, lathyrism, poisoning with mercury and certain gases, diphtheria, gout, anæmia, diabetes, etc.

Prognosis.—This depends upon the nature of the case. The final outcome cannot be foretold until some time after treatment has been begun. After the lapse of two years, no further improvement can be expected. Of recent years, surgery has promised much in localizable cases.

Treatment.—Try to ascertain the cause, and also locate the site of the lesion (see Spinal Cord Localization). Absolute rest on a water or air bed including feeding with a spoon and the use of the bed-pan and urinal, is of first importance. Bed-sores (*q.v.*), should be strictly guarded against. In the presence of fever, the diet should be liquid.

For painful cramps, employ hot applications, and one or several of the following sedative drugs—pot. bromide, gr. xx, with tr. belladonnæ, ℥v, in water, ℥ss, well diluted, once to thrice a day; sulphonal, gr. v, three to four times a day; phenacetin; antipyrine; nitroglycerin; hyoscine, morphine (see Drugs, Part 11).

For urinary incontinence, employ glass or rubber urinals or absorbent cotton frequently changed, and cleanse the parts frequently with a mild antiseptic. For urinary retention, employ systematic catheterization, with an occasional irrigation of the bladder with warm sterile boric acid solution, ℥i ad Oi, and the administration of urotropin for the prevention of cystitis. Urotropin, indeed, is advised as a spinal disinfectant; but it liberates formaldehyde only in an acid medium.

Move the bowels every other day, if necessary, by means of liquid paraffin and cascara or enemata.

If pregnancy exists, empty the uterus (see Part 4, Obstetrics). Syphilitic cases, of course, require specific treatment. Potassium iodide in large doses for a prolonged period is advised also in nonsyphilitic cases. For spinal caries, spinal support is indicated (see Part 10, Orthopædics). Vertebral fractures and dislocations require spinal support or operation, (see Part 10, Orthopædics).

As soon as acute symptoms have subsided, begin to employ, for the flaccid muscles, massage, electricity, and active and passive movements (see under Poliomyelitis for details). Prolonged hot baths and passive movements are serviceable measures for the relief of spasticity. Arsenic, and the elixir ferri, quininæ, et strychninæ phosphati, ℥i, well diluted, t.i.d., are useful tonics.

Of recent years, remarkable results have been obtained in localizable cases by a unilateral laminectomy, wide opening of the dura, and longitudinal incision of the posterior columns of the cord; in other words, spinal decompression.

Myelomata, Multiple, of the Bones.—See Multiple Myelomata of the Bones.

Myocarditis.—Gr. μῦς muscle + καρδία heart + -ιτις inflammation. **I. Acute Myocarditis.**—Acute myocarditis is usually parenchymatous, very rarely interstitial or suppurative. There may be no noticeable symptoms, or sudden death may occur, or the following manifestations may be present, viz., tachycardia, instability of the pulse, and low arterial tension (see Blood-Pressure), particularly after exertion, increased area of cardiac dulness, muffled first sound and diminished sharpness of the second sound, perhaps a systolic murmur due to muscular insufficiency, perhaps some cyanosis or pallor, perhaps precordial pain, perhaps vomiting, perhaps restlessness or listlessness, perhaps attacks of syncope.

Etiology.—Acute infection (typhoid fever, typhus fever, diphtheria, rheumatic fever, tonsillitis, influenza, scarlet fever, pneumonia, variola, gonorrhœa, septicopyæmia, etc.); ptomaine poisoning; toxæmia of pregnancy; coronary embolism or thrombosis, benign or septic.

Treatment.—Absolute rest in bed, including feeding with a spoon and the use of the bed-pan and urinal, is essential. The room should be well ventilated. The diet should be liquid and soft: diluted milk, egg albumen, beef-juice, custards, flavored gelatine, etc., water to be restricted. To slow the heart, apply the ice-bag frequently, suspended from a bed cradle. Morphine is a serviceable calmative, especially when heart-failure is imminent. Strychnine is recommended as a heart tonic (no digitalis). Calcium lactate, gr. iv, t.i.d., or the glycerophosphate, gr. v, t.i.d., may be of benefit. Iron is indicated for anæmia. Mild catharsis should be maintained by means of divided doses of calomel, castor oil, sulphur, compound licorice powder, or salts (for drug formulæ, etc., see Part 11).

The patient should be kept in bed until the pulse is normal, and does not become rapid upon slight provocation, such as the taking of food, or the visit of a stranger, etc. (at least two weeks after all cardiac symptoms have subsided). He should then be allowed up gradually, say for an additional half hour each day, being first propped up by pillows in bed, until he is up all day. Allbutt recommends, as a "mild cardiac tonic and calmative" during convalescence, tincture of prunus Virginiana, ℥xxx–lx.

II. Chronic Myocarditis.—Chronic myocarditis includes fibrosis, fatty degeneration, brown atrophy, amyloid degeneration, and hyaline degeneration. The latter two are rare. The affection may be latent, and first manifested by sudden death; or the following symptoms may be present, viz., breathlessness on exertion, with tachycardia, arrhythmia, and dizziness; commonly palpitations and indigestion; perhaps high arterial tension and attacks of epistaxis; perhaps precordial pain or angina pectoris; sometimes Stokes-Adams syndrome. The heart hypertrophies, except in atrophy due to exhausting diseases, and myocardial incompetence may eventually supervene (see Cardiac Insufficiency). Chronic interstitial nephritis is also a frequent accompaniment.

The Prognosis is always serious, and is very grave when incompetence occurs.

Etiology.—Coronary sclerosis (the commonest cause; see Arteriosclerosis, for its causes); valvular heart disease, heart-strain, due to physical or mental overwork; habitual overeating and overdrinking; overeating combined with sedentary habits; chronic alcoholism; excessive use of tea, coffee, or tobacco; gastro-intestinal intoxication; obesity; gout; diabetes; exophthalmic goitre; syphilis; malnutrition or starvation from improper or insufficient food; chronic infection (tonsillitis, pyorrhœa, sinusitis, pelvic disease, bronchitis, cholecystitis, appendicitis, tuberculosis, dysentery, chronic suppuration, etc.); exhausting diseases (cancer, anæmia, etc.); poisoning with lead, arsenic, or phosphorus; repeated attacks of rheumatic fever; neoplasm, gumma, or parasitic disease of the myocardium.

Treatment.—Enjoin a quiet, well-regulated life, free from all excesses—physical or mental stress, worry, over-indulgence in eating or drinking, and in the use of tea, coffee, or tobacco, and excessive sexual indulgence; at least ten or eleven hours' sleep at night should be obtained. The diet should be light, bland, and easily digestible: meat in moderation, a minimum of salt and fluids; no tea, coffee, alcohol, fried foods, or broths which contain stimulating extractives, etc. (see the diet recommended in the stage of cardiac compensation, under Cardiac Insufficiency). The bowels should be kept active, employing, for this purpose, as required, a mild laxative, such as compound licorice powder, or aromatic cascara sagrada, or compound laxative pills. (Part 11). If the patient is obese, prescribe the obesity cure described under Obesity. Fresh air day and night is of importance. A daily warm bath lasting about fifteen minutes should be taken. Daily moderate exercise in the open air should be practiced, with strict

avoidance of fatigue, breathlessness, palpitation, sense of tightness across the chest, or precordial pain or distress. The clothing should be loose. An hour's rest should be observed before and after meals.

For anæmia, prescribe iron and arsenic.

For high pulse tension, with palpitation and breathlessness, prescribe, besides laxatives and restriction of the diet, sodium nitrite, or erythrol tetranitrate. The iodides are deemed of value in arteriosclerosis (*q.v.*).

Myocardial syphilis occurs sometimes in the tertiary stage of the disease, and requires specific medication.

For the treatment of the stage of incompetence, see Cardiac Insufficiency.

Myoclonus.—(See Paramyoclonus Multiplex.)

Myositis.—Gr. μῦς muscle + -ιτις inflammation. I. Suppurative Myositis.—The occurrence of suppuration in voluntary muscle is rare. The bacterial agents are staphylococci, streptococci, etc., which gain entrance through a furuncle or other focus of infection. The affected muscle is swollen, hard, contracted, painful, and tender, and the overlying skin is freely movable. Constitutional symptoms are present, *e.g.*, chills, fever, malaise, headache, anorexia, and prostration. Acute osteomyelitis may be suspected. Fluctuation usually occurs within ten days.

Treatment.—Open the bowels thoroughly. Apply heat, and as soon as fluctuation occurs, make a free incision and drain the pus cavity with dry sterile gauze (see Inflammation). Renew the dressing daily or less often until healing has occurred.

If contracture ensues, employ massage, active and passive movements, and if necessary, fixation in extension for a time.

II. Dermato-myositis; Acute Polymyositis.—A very rare and serious acute, subacute, or chronic non-suppurative inflammation of the voluntary muscles, of unknown origin, associated with dermatitis and an œdema that may be general. The onset is usually gradual, with malaise, anorexia, headache, vague pains, and weakness, followed after some days or weeks, by definite muscle pains, fever, sweating, œdema, dermatitis, and usually an enlarged spleen. The heart muscles may become involved; also the muscles of deglutition or those of respiration, with death in the latter instance from asphyxia or broncho-pneumonia. Disorders of sensation and ataxia may occur (neuro-myositis).

A still rarer polymyositis hæmorrhagica is also described. There is a mild acute polymyositis associated with erythema multiforme and urticaria (*q.v.*, in Part 5, Skin Diseases, for treatment).

The disease may last from one or two weeks to two years. It should be distinguished from trichinosis (by the microscopic examination of a piece of muscle), from primary suppurative myositis, syphilitic myositis, and scleroderma.

Treatment.—Open the bowels freely by means of calomel followed by salines; and promote diaphoresis by means of blankets and hot bottles and copious draughts of water. Irrigate the colon with normal saline solution (℥i ad Oi). Inunctions of unguentum Credé are recommended (see Part 11 for all drugs).

During convalescence, employ massage, electricity, and strychnine; and to prevent contractures, fixation in extension, or extension by means of a pulley and weights, followed by massage and active and passive movements.

III. Primary Myositis Fibrosa.—A slow gradual hardening and contraction of one or more of the voluntary muscles.

Massage, electricity, hot air, and hot baths may effect more or less of a cure.

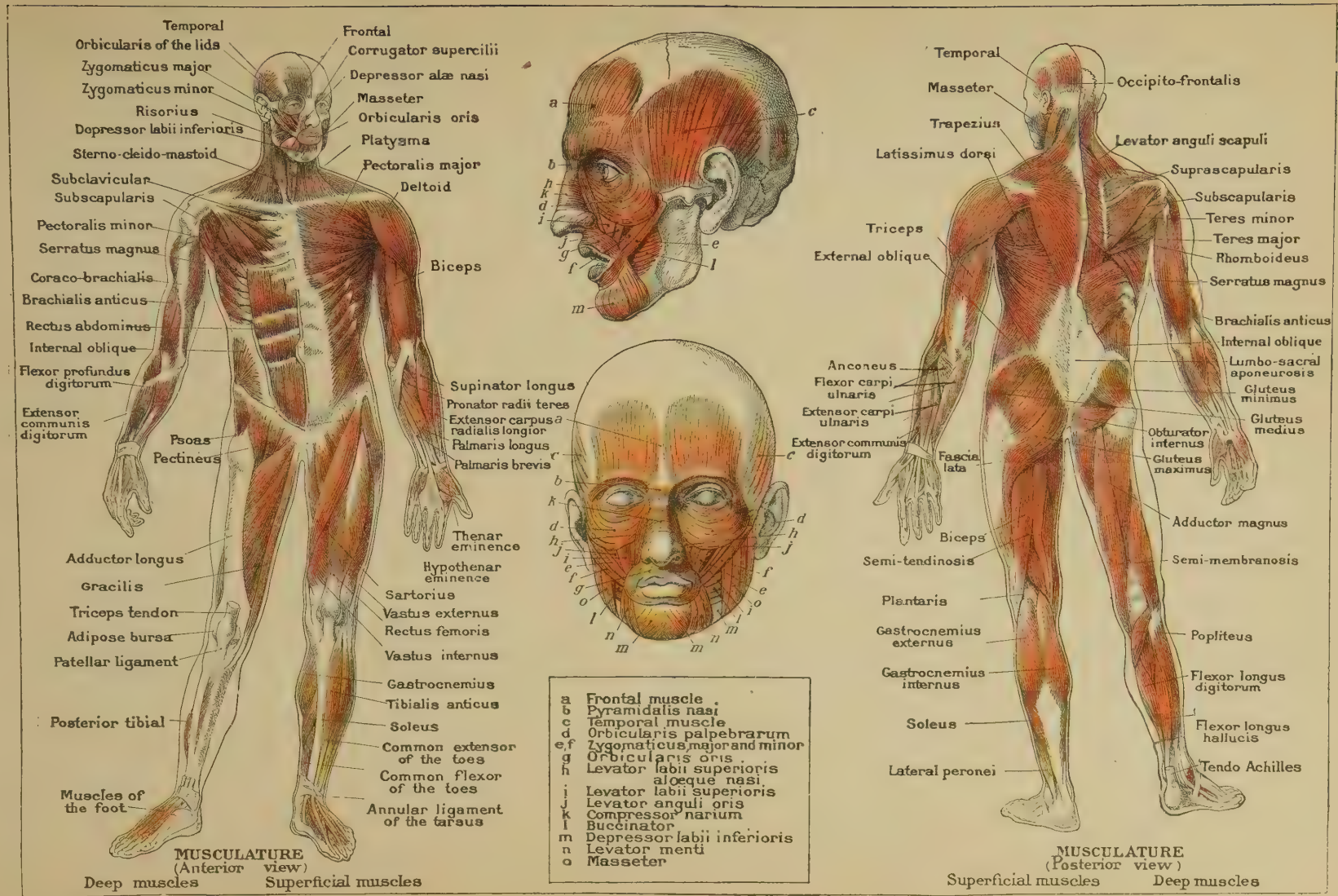
IV. Myositis Ossificans Progressiva.—A very rare, chronic, multiple inflammatory affection of the muscles, fasciæ, aponeuroses, tendons, ligaments, and bones, of unknown cause, beginning usually in early life, and resulting gradually in the formation of bony masses in the structures involved, with eventual ankylosis of most of the articulations.

Trauma, sometimes simple palpation of a muscle, and also exposure to cold, may cause the growth to form. Therefore, these and similar deleterious agencies should be avoided.

Myotonia; Thomsen's Disease.—Gr. μῦς muscle + τόνος tension. A rare, incurable, hereditary, familial affection, characterized by the occurrence of tonic muscular cramps on attempting voluntary movements.

Says Moffitt, Thomsen himself, who had the disease, "recommended active muscular exertion."

Myxœdema.—Gr. μύξα mucus + ὀίδημα swelling. A rare, chronic, slowly progressive disease of variable severity, due to impairment or loss of function of the thyroid gland, occurring spontaneously or as a result of operative removal of the gland, and characterized by the following symptoms, viz., mental inertia, dryness, roughness and yellowness of the skin, brawny, solid, inelastic, myxœdematous infiltration of the


Temporal
Orbicularis of the lids
Zygomaticus major
Zygomaticus minor
Risorius
Depressor labii inferioris
Sterno-cleido-mastoid
Subclavicular
Subscapularis
Pectoralis minor
Serratus magnus
Coraco-brachialis
Brachialis anticus
Rectus abdominus
Internal oblique
Flexor profundus digitorum
Extensor communis digitorum
Psoas
Pectineus
Adductor longus
Gracilis
Triceps tendon
Adipose bursa
Patellar ligament
Posterior tibial
Muscles of the foot
Frontal
Corrugator supercilii
Depressor alæ nasi
Masseter
Orbicularis oris
Platysma
Pectoralis major
Deltoid
Biceps
Supinator longus
Pronator radii teres
Extensor carpus radialis longior
Palmaris longus
Palmaris brevis
Thenar eminence
Hypothenar eminence
Sartorius
Vastus externus
Rectus femoris
Vastus internus
Gastrocnemius
Tibialis anticus
Soleus
Common extensor of the toes
Common flexor of the toes
Annular ligament of the tarsus
MUSCULATURE
(Anterior view)
Deep muscles
Superficial muscles
a Frontal muscle
b Pyramidalis nasi
c Temporal muscle
d Orbicularis palpebrarum
e,f Zygomaticus major and minor
g Orbicularis oris
h Levator labii superioris aloeque nasi
i Levator labii superioris
j Levator anguli oris
k Compressor narium
l Buccinator
m Depressor labii inferioris
n Levator menti
o Masseter
Temporal
Masseter
Trapezius
Latissimus dorsi
Triceps
External oblique
Anconeus
Flexor carpi ulnaris
Extensor carpi ulnaris
Extensor communis digitorum
Fascia lata
Biceps
Semi-tendinosis
Plantaris
Gastrocnemius externus
Gastrocnemius internus
Soleus
Lateral peronei
Occipito-frontalis
Levator anguli scapuli
Suprascapularis
Subscapularis
Teres minor
Teres major
Rhomboideus
Serratus magnus
Brachialis anticus
Internal oblique
Lumbo-sacral aponeurosis
Gluteus minimus
Gluteus medius
Obturator internus
Gluteus maximus
Adductor magnus
Semi-membranosis
Popliteus
Flexor longus digitorum
Flexor longus hallucis
Tendo Achilles
MUSCULATURE
(Posterior view)
Superficial muscles
Deep muscles

Muscles.

skin, which does not pit on pressure; loss of hair; lips thick, nostrils broad and thick, and mouth enlarged; pulse slow and of low tension; temperature subnormal; extremities cold and blue; cachexia.

Occurring before the age of fifteen years, the condition is called cretinism (*q.v.*).

It is curable under thyroid treatment.

Treatment.—℞ Glandulæ thyroideæ siccæ (Parke Davis Co.) vel Thyroidei sicci (Burroughs and Welcome), gr. ss–i, t.i.d., gradually increased to gr. x–xv per day, if need be. After good results have been attained, reduce the daily dose to the amount required to keep the patient normal (usually three grains a day, or every other day, or even less often). The occurrence of the following toxic symptoms calls for a suspension of the treatment: tachycardia, palpitation, cardiac pain, dyspnœa, pallor, faintness, flushing, sweating, urticaria, anorexia, nausea or vomiting, diarrhœa, headache, nervousness, restlessness, insomnia, tremor, elevation of temperature, loss of weight, muscle pains, rarely tonic spasms, sometimes albuminuria or glycosuria, perhaps delirium. Should these symptoms occur, put the patient to bed, apply an ice-bag to the heart, and administer, if necessary, strychnine, atropine, or adrenalin (see Part 11). Says Leonard Williams: "The recumbent pulse should never be allowed to go above 95°; the drug should also be suspended for a time "when the temperature rises to normal"; and "if the weight begins to fall"; "it is a safe plan to intermit the treatment for one week in every four." He says, also, that the effect of the thyroid extract is "considerably enhanced" if it is exhibited in combination with three other drugs, namely, iodine, arsenic, and calcium.

℞ Calcii iodidi ..... gr. v
Liquoris arsenicalis (Fowler's sol.) .... ♏ii
Aquæ chloroformi, q.s., ad ..... ℥ss
M. Sig.—One-half ounce (tablespoonful) t.i.d.p.c. (suspend every fourth week, coincidently with the thyroid extract). (Leonard Williams.)

(Iodothyrin and other similar preparations are said to be less effective than the dried sheep's gland.)

The patient should avoid alcohol, salt, meat, and cold baths. The diet should consist of milk, eggs, butter, vegetables, cereals, and fruit. Rest, fresh air day and night, warm clothing, a warm climate in winter, and frequent warm baths are of importance. General massage is very beneficial.

If thyroid extract should prove ineffectual, try pituitary extract experimentally.

Nasal Diseases.—See Part 8, Diseases of the Nose.

Nasha Fever.—A disease of India, of three to five days duration, characterized by fever, constipation, and congestion of the nasal mucous membrane, followed after several days by a chill.

Treatment.—Give a saline purge, and spray the nostrils with ice-water several times a day. Employ cold baths, wet packs, and sponging for the fever (*q.v.*).

Nausea.—L., Gr. *ναυσία* seasickness. See Vomiting.

Neck, Cellulitis of the.—See Ludwig's Angina.

Neck Enlargements.—**Causes.**—Lymphadenitis, simple or tuberculous (*q.v.*); syphilis; carcinoma; lympho-sarcoma; leukæmia; Hodgkin's disease; actinomycosis; cellulitis; glandular fever; German measles; parotitis; dermoid cyst; branchial cyst; echinococcus cyst; congenital hygroma (often disappears spontaneously); lipoma; enlarged hyoid bursa; goitre; aberrant goitre, situated in the median line; œdema of the neck, due to venous thrombosis, mediastinal tumors, or inflammatory exudate; interstitial emphysema.

Nephralgia.—See Part 3, Male Genito-Urinary Diseases.

Nephritic Abscess.—Gr. *νεφρός* kidney. See Pyelonephritis.

Nephritis, Acute.—Gr. *νεφρός* kidney + *-ιτις* inflammation. See Bright's Disease.

Chronic Interstitial.—See Bright's Disease.

Chronic Parenchymatous. — See Bright's Disease.

Suppurative.—See Pyelonephritis.

Nephrolithiasis; Renal and Ureteral Calculus.—Gr. *νεφρός* kidney + *λίθος* stone; L. *ren*, kidney; Gr. *οὐρητήρ* ureter; L. *calculus* pebble. **Symptomatology and Diagnosis.**—No symptoms at all, or the following symptoms may be present, viz., aching pain and tenderness in the region of the kidney and in the course of the ureter (sometimes the pain is referred to the opposite side); frequent urination; microscopic hæmaturia or attacks of visible hæmaturia; perhaps a palpable renal tumor; perhaps the occurrence of renal (ureteral) colic, characterized by sudden, sharp, tearing, paroxysmal pain, extending along the course of the ureter into the scrotum, the end of the penis, and the thighs, with retraction of the testicle, frequent desire to urinate, painful urination, scanty urine which is apt to be blood-tinged, and elevation of temperature, chills, vomit-

ing, and prostration; local soreness follows the paroxysm, which ceases suddenly when the stone is passed into the bladder, or back into the renal pelvis, or into a dilated portion of the ureter; in the latter event there may be continued pain and tenderness; anuria may occur as a result of the occlusion of both ureters with stone, or one with stone and the other by reflex spasm, or the occlusion of one ureter with stone while the other kidney is diseased or absent; partial retention of urine in the kidney pelvis results in hydronephrosis; sometimes pyonephrosis, pyelonephritis, or perinephric abscess occurs.

Exclude in the diagnosis, tumor; tuberculosis; essential renal hæmaturia; stricture or torsion of the ureter with resulting hydronephrosis; stone; tuberculosis or tumor of the bladder; prostatic hypertrophy or carcinoma; chronic prostatitis; seminal vesiculitis; Pott's disease; bony spinal exostosis; spinal cord lesions; lumbago; neuralgia (H. H. Young). Other causes of renal colic, or of paroxysms resembling renal colic, are: the passage of crystals, plugs of muco-pus, blood-clots (see Hæmaturia), parasites, or tumor fragments; Dietl's crises; biliary colic; appendicular colic; oöphoritis; intestinal colic; vesiculitis; chronic prostatitis; pancreatitis.

Aids to diagnosis include vaginal or rectal palpation; ureteral catheterization; the passage of a ureteral wax-tipped bougie; radiography (with a wire-containing catheter in the ureter to exclude, if possible, phleboliths, etc., etc.); and Murphy's "fist percussion" over the lumbar region, which sets up intense pain, in the presence of stone, due to distention of the renal pelvis.

Treatment.—For renal colic, administer a hypodermic of morphine, gr. $\frac{1}{6}$ to $\frac{1}{4}$, with atropine, gr. $\frac{1}{100}$, apply hot water bags, hot packs, or hot poultices to the painful region, or place the patient in a hot bath, for the purpose of relaxing spasm, and give hot lemonade, soda or barley water freely. A copious hot colonic irrigation is useful. Spt. ætheris comp., ʒii–iv, in 2 to 4 oz., of normal saline solution (ʒi ad Oi) may be injected into the rectum. Ether or chloroform inhalations may be required until the morphine acts. One may administer tr. belladonnæ, ♏x, in two tablespoonfuls of water, every three or four hours, until the pupils become dilated, the face flushed, and the mouth dry, for the purpose of relaxing ureteral spasm and permitting of the passage of the stone. Inversion of the body sometimes helps. Glycerine in large doses, 2 to 4 oz. daily, is recommended. It may be given with equal parts of lemon juice, or in lemonade in the place of sugar, 1 to 2 oz. to the quart.

If it is believed that the stone is impacted in the ureter, the latter may be dilated, and sterile olive oil injected; or an attempt may be made to push the stone back into the kidney pelvis. If the stone is palpable through the rectum or vagina, gentle and careful efforts may be made to advance the stone with the finger.

Should anuria occur, administer large quantities of water, 4 to 6 ounces every hour, with diuretics (pot. acetate or citrate, infusum scoparii, triticum repens; juniper berries, see Part 11 for all drugs), hot bottles or hot applications over the abdomen and lumbar region, saline infusions (0.6 per cent.), and perhaps chloroform anæsthesia or tr. belladonnæ, for the purpose of relaxing ureteral spasm; or olive oil may be injected into the affected ureter; or the spasmed ureter may be catheterized.

If the condition is not relieved on the third day, take a radiograph, if practicable, and in any case operate at once on the side last affected with colic. Perform nephrotomy and drainage. At a later date, unless the patient's condition is favorable at the time, locate and remove the obstructing ureteral stone.

Should the stone pass spontaneously, keep the urine free and bland by means of a bland diet, lots of water, and perhaps infusion of buchu or of uva ursi, oil of sandalwood, or urotropin, with the object of hastening healing and preventing or controlling inflammation due to traumatism.

Operation is indicated in anuria (see above); profuse hæmaturia; pyuria (suppurative pyelonephritis); recurring attacks of renal colic; unbearable pain and sensation of pressure; ureteral stone measuring 2 cm. or more in width; ureteral stone measuring 1.5 cm. or less which has not passed in six months; indeed, according to Casper, "whenever the presence of a calculus can be positively determined." "If both kidneys are functioning fairly well, bilateral nephro-lithotomy is permissible" (Keyes). Do a nephrectomy if the kidney is much diseased and the other kidney is sound (see Urinalysis.) If the stone is in the bladder-wall, a suprapubic intravesical, or a cystoscopic operation is performed. For pressure pains, Casper recommends glycerine, ʒiss–iii–v, twice a week, given with syrup of orange peel, ʒv, to obviate nausea.

Prophylaxis.—Urinary calculi may be conveniently divided into two categories, (1)

primary calculi, or those not ordinarily due to infection, and forming in an acid urine; and (2) secondary calculi, or those due to local infection (see causes under Retention of Urine, in Part 3), and forming in an alkaline urine (see Alkalinuria). Primary stones consist of (a) uric acid or urate of sodium, calcium, or potassium; (b) oxalate of calcium; or, very rarely, (c) carbonate of calcium; (d) cystin; (e) xanthin; (f) crystalline phosphate of calcium; or (g) indigo. Secondary stones consist of ammonio-magnesium phosphate (triple phosphate), amorphous phosphate of calcium; and tricalcic phosphate, rarely urate of ammonium or urostealith. Primary stones may give rise to infection and become encrusted with calcium phosphate.

Primary stones occur as the result of a highly acid urine, favored by a sedentary life, alcoholism, excessive nitrogenous or purin-rich food, or malnutrition in the children of the poor, constipation, inactive skin, torpid liver, excessive eating of acid fruits (oranges, grape-fruit, strawberries, tomatoes, rhubarb), gout, plumbism, obesity, diabetes, leukæmia, fevers, and lime salts in the drinking water. Heredity is a factor. Cystinuria is due to a congenital defect in the catabolism of the sulphur-containing amino-acids of the tissues.

Hofmeister's Table for Examination of Urinary Calculi. (See below).

The murexid test is performed as follows: To the powder, in an evaporating dish, add a few drops of concentrated nitric acid, and evaporate to dryness on the water bath. After cooling, add to the residue a few drops of ammonium hydrate solution; a reddish purple solution results. On adding water and evaporating to dryness, this color disappears if the original powder was uric acid.

To prevent the formation of uric acid and urates (manifested by a brick-dust deposit in a hyperacid urine), restrict foods rich in purins, sugars, fats, and alcohol, and allow milk, butter, eggs, and red meats (preferably boiled to remove the extractives)

WHEN HEATED ON THE PLATINUM-FOIL THE POWDER

(HOFMEISTER'S TABLE)

Does not burn				Burns				
The powder when treated with hydrochloric acid				With flame			Without flame	
Does not effervesce				The flame is yellow, continuous, odor of burning feathers. Insoluble in alcohol and ether; soluble in hot KOH, and reprecipitated white by acetic acid, with H_2S formation.	A yellow, clear continuous flame, odor of resin or shellac; the powder soluble in alcohol and ether.	Flame pale blue, burns for a short time with a characteristic sharp odor. The powder is soluble in NH_4OH and on evaporating hexagons are precipitated.	Does not give the murexid test. The powder is soluble in HNO_3 without gas effervescence, and this dried residue becomes orange when KOH added, then red on warming.	The powder gives the murexid test.
The powder moderately burned plus hydrochloric acid								The native powder on the addition of a little KOH in the cold.
Does not effervesce		Effervesces.	Effervesces.					Gives off much NH_3.
The native powder moistened with potassium hydrate								Gives off little or no NH_3.
Gives off much NH_3. The powder is soluble in acetic and HCl, and a crystalline precipitate formed with NH_4OH.	Gives off little or no NH_3. The powder is soluble in HCl and acetic acid—an amorphous precipitate falls with NH_4OH.							
Triple phosphate	Neutral Ca or Mg phosphate	$CaOx$	$CaCO_3$	Fibrin	Fat	Cystin	Xanthin	Ammonium urate / Uric acid

in moderation; and poultry, fish, bread, cereals, fresh vegetables and fruits (excepting very acid fruits, such as grape-fruit, oranges, strawberries, tomatoes, and rhubarb) in abundance. Whey, a cupful two or three times a day, is said to prevent the the alkaline aërated waters, such as Vichy and Apollinaris, or water containing sod. bicarb., gr. xv–xx, or pot. citrate or acetate, gr. xx–xxx, to the tumblerful, one or two hours after meals, or night and morning, to prevent hyperacidity of the urine and pre-

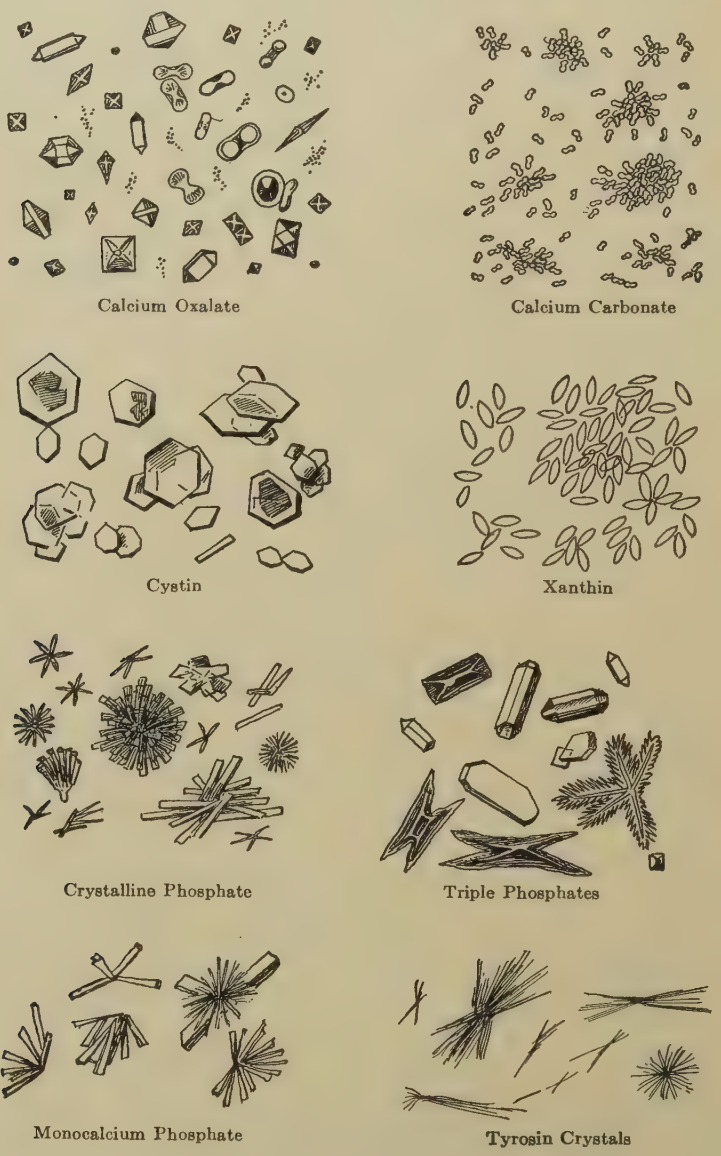
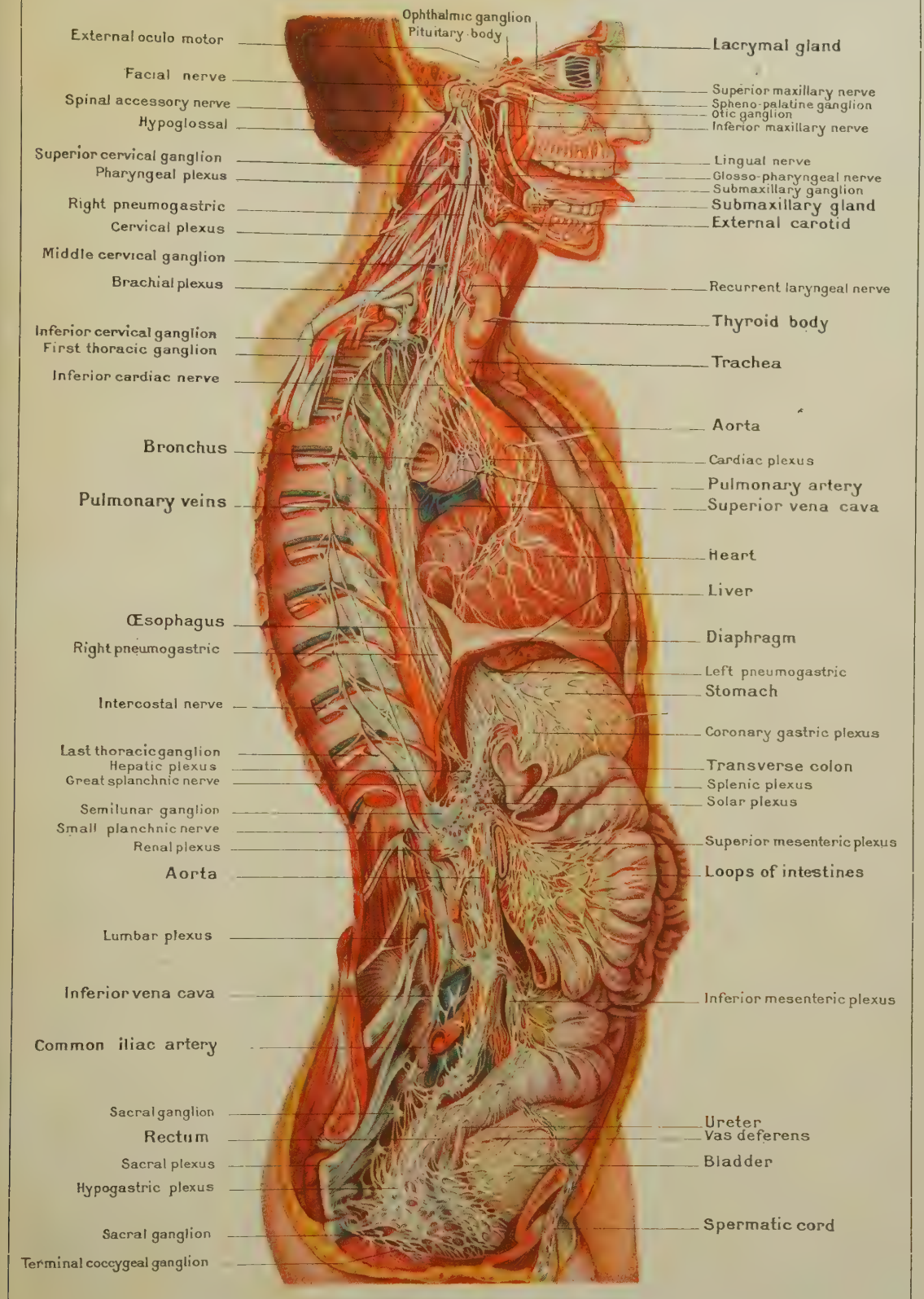


Fig. 53.—Urinary crystals.

deposition of uric acid. The following articles should be interdicted, viz., sweetbreads, thymus, spleen, liver, brains, kidney, fish roe, game, flesh of young animals, shell-fish, salt meats, mushrooms, asparagus, strong tea and coffee, and fried, highly seasoned, and indigestible foods generally. Water should be drunk freely, especially cipitation of uric acid. Since the urinary acidity rises at night and in the early morning, due to fasting, it is advised that sod. bicarb. or pot. citrate, gr. xx–lx, in half-a pint of water, or liq. potassæ, gtt. x–xx in milk, be taken as late at night as possible. The bowels should be kept regular. For this purpose the laxative Hunyadi and



LAROUSSE MEDICAL

Cranial and visceral nerves.

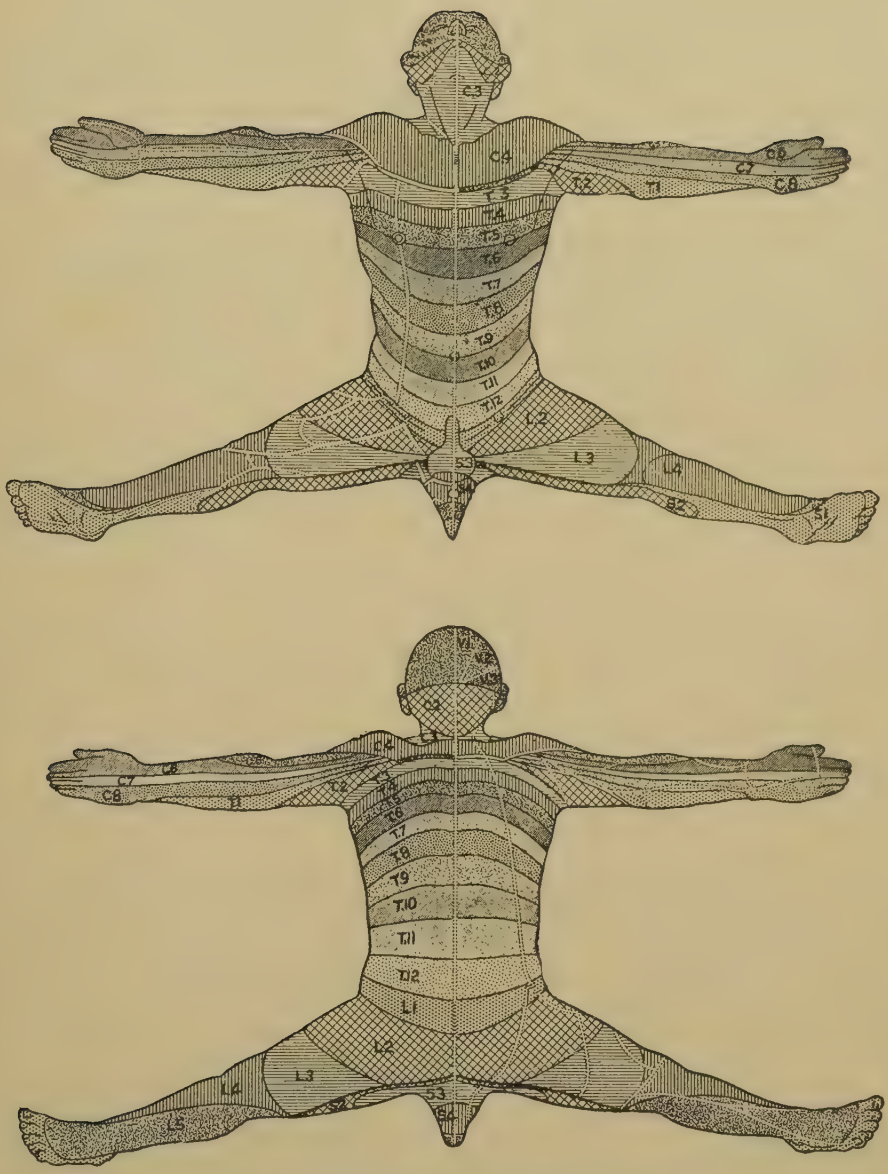


FIG. 78.—Model showing Cutaneous Root Areas.

C 1 to 8, sensory skin areas corresponding to the eight cervical spinal roots; T 1 to 12, to the thoracic or dorsal spinal roots; L 1 to 5, the lumbar spinal roots; and S 1 to 5, the sacral spinal roots.

Peripheral Nerve Areas are indicated by white lines on the right half of the model. (See Figure 54.)

Friedrichshall waters (containing sodium sulphate) are useful. Enjoin daily exercise in the fresh air, breathing exercises, frequent tepid baths, and fresh air day and night.

For oxaluria (manifested by a light, flocculent sediment showing oxalate of calcium crystals under the microscope), administer a calomel and saline purge, followed after three or four days by:

℞ Acidi nitrohydrochlorici diluti ..... ℥ii (mx per dose)
Tincturæ cinchonæ, q.s., ad.. ℥ii

M. Sig.—One teaspoonful, well diluted, p.c., for only a few days; to be discontinued after the disappearance of the crystals from the urine, for fear of causing hyperacidity and irritation. (Le Fevre.); or,

℞ Sodii phosphatis dihydrogenii .... gr. xxx–lxxx
Aquæ destillatæ ..... ℥i

M. Sig.—One ounce, well diluted, every three hours; up to one ounce of the acid sodium phosphate a day, well diluted. (Acids increase the solubility of oxalate calculi.)

Or administer:

℞ Magnesii carbonatis ..... ℥i
Acidi citrici ..... ℥ii
Sodii biboratis ..... ℥ii
Aquæ bullientis ..... ℥viii

M. Sig.—One tablespoonful, 2 to 3 times daily (borocitrate of magnesium); or,

℞ Magnesii oxidi ..... ℥ss–i
Aquæ ..... ℥i

M. Sig.—Shake well and take one ounce t.i.d.p.c. (oxalates are more soluble in the presence of magnesium).

Potassium citrate (or lemon juice) is also recommended, for the purpose of combining with calcium and thereby preventing the formation of calcium oxalate crystals.

An occasional course of sodium phosphate, or sodium sulphate, or magnesium sulphate, ℥ss, t.i.d., is recommended.

The oxalate-containing foods, spinach, rhubarb, and strawberries, should be avoided. Oxalates are "held in solution in the urine by salts of magnesium derived from meat, legumes, potatoes, apples, and farinaceous foods, and the calcium salts found in milk, eggs, and green vegetables" (Le Fevre); therefore these foods should be allowed. Gastric or intestinal fermentation due to hypochlorhydria, chronic pancreatitis with or without hyperchlorhydria, and neurasthenia have some influence in the production of oxaluria.

For cystinuria, prescribe ammonium carbonate (Part 11), or sodium bicarbonate, ℥iss–iiss, daily; and restrict albuminous food. Alkalies prevent the formation of cystin, and help to dissolve cystin stones.

For alkalinuria, administer dilute nitric, hydrochloric nitrohydrochloric, or sulphuric, or aromatic sulphuric acid, gtt. x–xv, t.i.d., in a glass of sweetened water; or acid sodium phosphate, gr. xxx–lxxx, well diluted, every three hours; or benzoic acid or sodium benzoate, gr. x–xv, well diluted, every two to four hours; or boric acid, gr. v–x, well diluted, every two to four hours.

Nephroptosis.—Gr. *νεφρός* kidney + *πτῶσις* falling. See Splanchnoptosis.

Nerves, Peripheral, Affections of the.—The localization of the disease is ascertained by the distribution of the resulting sensory and motor (flaccid) paralysis. In incomplete lesions, however, as in those due to compression, the sensory nerve-fibres may be little, if at all, affected (Fig. 54).

I. Cranial or Cerebral Nerves:

1. Olfactory Nerve.—See Olfactory Affections.

2. Optic Nerve.—See Optic Nerve Affections.

3. Oculomotor Nerve.—See Motor Nerves of the Eyeball.

4. Trochlear Nerve.—See Motor Nerves of the Eyeball.

5. Trigeminal Nerve.—See Trigeminal Nerve; and Neuralgia.

6. Abducens Nerve.—See Motor Nerves of the Eyeball.

7. Facial Nerve.—See Facial Paralysis, and Tic.

8. Auditory Nerve.—See Auditory Nerve.

9. Glossopharyngeal Nerve.—See Glossopharyngeal Nerve.

10. Pneumogastric Nerve.—See Vagus Nerve.

11. Spinal Accessory Nerve.—See Spinal Accessory Nerve.

12. Hypoglossal Nerve.—See Hypoglossal Nerve.

II. Spinal Nerves:

Spinal Roots.—See Spinal Roots.

Phrenic Nerve.—See Phrenic Nerve and Neuralgia.

Brachial Plexus.—See Brachial Plexus and Neuralgia.

Long Thoracic Nerve.—See Brachial Plexus and Neuralgia.

Circumflex Nerve.—See Brachial Plexus and Neuralgia.

Musculo-spiral Nerve.—See Brachial Plexus and Neuralgia.

Radial Nerve.—See Brachial Plexus and Neuralgia.

Ulnar Nerve.—See Brachial Plexus and Neuralgia.

Median Nerve.—See Brachial Plexus and Neuralgia.

Suprascapular Nerve.—See Brachial Plexus and Neuralgia.

Musculocutaneous Nerve.—See Brachial Plexus and Neuralgia.

Lumbar Plexus.—See Lumbar Plexus.

Anterior Crural Nerve.—See Lumbar Plexus.

Obturator Nerve.—See Lumbar Plexus.

External Cutaneous Nerve.—See Meralgia Paræsthetica.

Sacral Plexus.—See Sacral Plexus.

Sciatic Nerve.—See Sacral Plexus and Neuralgia.

External Popliteal Nerve.—See Sacral Plexus.

Anterior Tibial Nerve.—See Sacral Plexus.

Internal Popliteal Nerve.—See Sacral Plexus.

Posterior Tibial Nerve.—See Sacral Plexus.

Nervous Diarrhœa.—See Diarrhœa.

Dyspepsia.—See Dyspepsia, Nervous.

System.—See Brain Localization, Spinal Cord Localization, and Nerves, Peripheral.

Neuralgia.—Gr. *νεῦρον* nerve + *ἄλγος* pain. Neuralgia, or pain in the course and distribution of a peripheral nerve, is either functional or organic; that is, the pain is due either to extraneous irritation, or to disease of the nerve itself. In the latter instance the condition is termed neuritis. Neuritis is manifested by undue tenderness on pressure over the nerve, pain on stretching the nerve, and perhaps areas of anæsthesia or paralysis in the distribution of the nerve. Hyperæsthesia, paræsthesia, and a rash are sometimes associated with neuralgia. See also Neuritis.

General Etiology.—Neuropathic disposition; (heredity, hysteria, neurasthenia); debility; anæmia; arteriosclerosis; gout; diabetes; nephritis; beri-beri; menstruation; toxæmia of pregnancy; overexertion; exposure to cold; poisons (lead, arsenic, mercury, iodine, alcohol, morphine, tobacco, copper, ether, zinc, silver, phosphorus, carbon monoxide, carbon disulphide, dinitrobenzene, naphtha, chloretone, trional, sulphonal, creosote phosphate, ptomaines, etc.); infection (influenza, malaria, typhoid fever, typhus fever, measles, scarlet fever, mumps, whooping-cough, tuberculosis, syphilis, Malta fever, smallpox, gonorrhœa, diphtheria, pneumonia, leprosy, trichiniasis, erysipelas, septicopyæmia, carious teeth, pyorrhœa, infected tonsils, prostatitis or other foci of infection); neighboring inflammation; withdrawal of the drug in morphine or cocaine addiction; central nervous diseases (tabes, general paresis, syphilis, thalamus involvement, tumor, multiple sclerosis, syringomyelia, minute traumatic hemorrhages in the spinal cord, myelitis, etc.); reflex irritation (from the teeth, gums, nasal sinuses, eyes, ears, lungs, heart, stomach, liver, intestines, kidneys, ureters, bladder, uterus, ovaries, prostate, testes); inflammation of sensory ganglia (herpes zoster, *q.v.*, in Skin Diseases, Part 5); tumors of sensory ganglia; compression due to tumors, aneurysm, exostoses, scar tissue, spinal caries, metastatic fibro-osteal spondylitis involving the spinal foramina (examine the spinal column for sensitive areas and fixation,—J. B. Murphy); fractures and displacements; traumatism.

Atmospheric pressure, humidity, high electrical tension, etc., may act as exciting causes.

Special Etiology.—1. Trigeminal or Trifacial Neuralgia; Tic Douloureux.—Tic douloureux is distinguished from migraine by the localization of the pain in the course of the branches of the fifth nerve, and not, as in migraine, in the temple and side of the head. (Starr.)

Special Causes.—Dental caries; pyorrhœa alveolaris; glossitis; sinusitis; otitis; ophthalmia; eyestrain; skin affections of the face and head; herpes zoster; chronic disease of the Gasserian ganglion; rarely pressure upon the ganglion by a tumor or carotid aneurysm.

2. Cervico-Occipital Neuralgia.—*Special Causes.*—Cold; cervical caries; syphilis; meningitis; tumors; lymphatic enlargement; adhesions; aneurysm of the vertebral artery; cervical arthritis deformans; injury to the vertebræ; the carrying of heavy weights upon the shoulder; pelvic disease.

3. Brachial Neuralgia.—*Special Causes.*—Cold; traumatism; excessive sweeping, piano-playing, etc.; arthritis; subcoracoid bursitis due to round shoulders (see Round Shoulders in Part 10, Orthopædics); compression by a tumor, aneurysm, callous, costal periostitis, or cervical rib (see under Brachial Plexus); angina pectoris; vertebral, meningeal, or cord disease; "small punctured wounds about the wrist, forearm, and arm."

4. Phrenic or Diaphragmatic Neuralgia.—Manifested by pain in the lower thorax on deep breathing or coughing.

Special Causes.—Pleurisy; pericarditis; mediastinal disease; aortic aneurysm; carcinoma in the neck; goitre.

5. Intercostal Neuralgia, Including Mastodynia.—Tenderness is often elicited at the points of exit of the nerves in front,

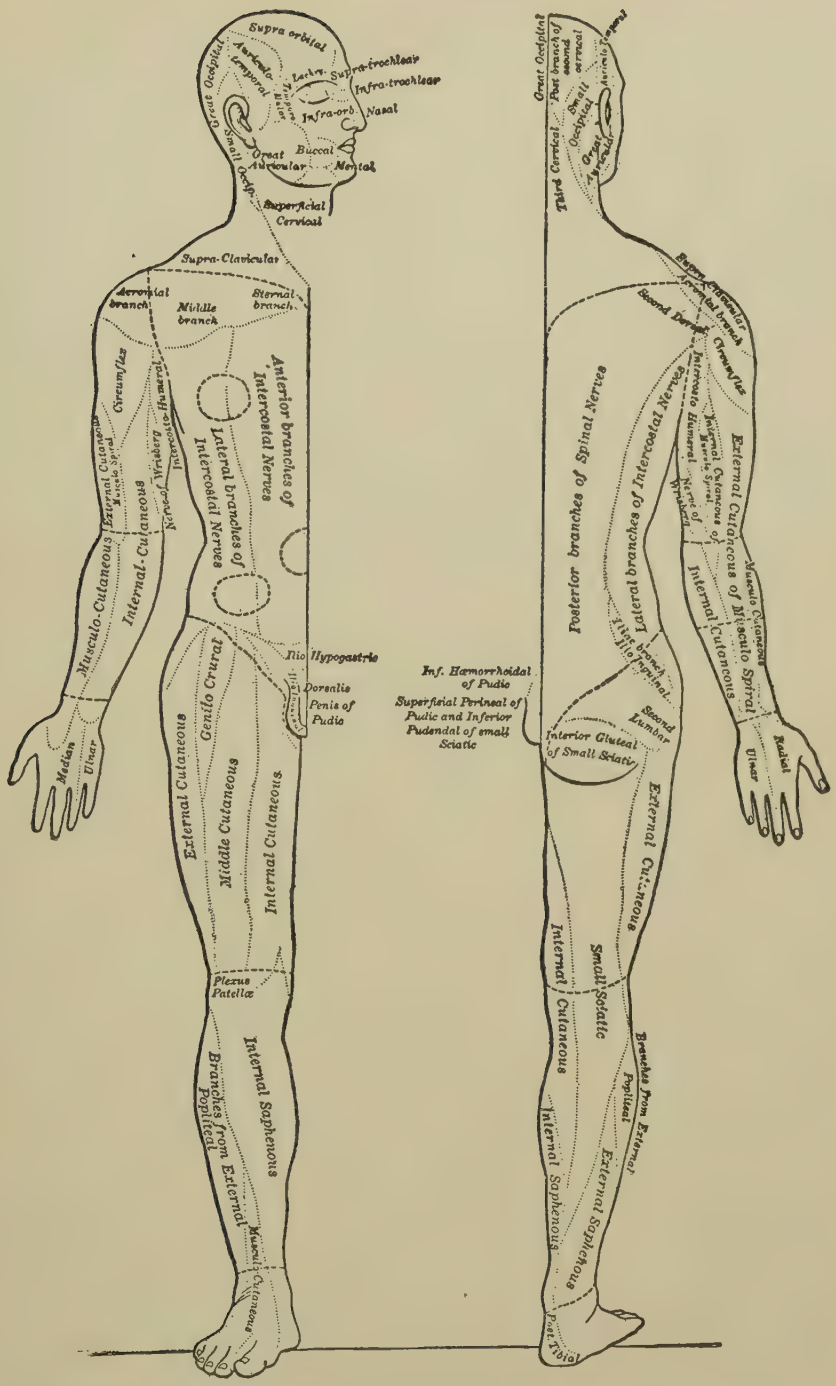


FIG. 54.—The distribution of sensory nerves in the skin.

in the axilla, or in the back near the spine, thus distinguishing the affection from pleurodynia.

Special Causes.—Herpes zoster; spinal caries; pleuritis, especially tuberculous and carcinomatous; pericarditis; spinal cord and meningeal disease; aortic aneurysm; angina pectoris; hepatic carcinoma; dilatation of the stomach; traumatism; hysteria.

6. Lumbo-Abdominal, Including Testicular and Ovarian Neuralgia.—*Special Causes.*—Inflammation or tumors involving the lumbar plexus; ovarian disease. Testicular neuralgia or irritable testicle has the following etiology: psychic or physical sexual excess, or prolonged ungratified sexual desire combined with a neurotic nature; renal or vesical calculus; varicocele; prostatitis; vesiculitis; congestion of the verumontanum (exclude gonorrhœa, tuberculosis, etc.).

7. Crural Neuralgia.—*Special Causes.*—Chronic constipation; hip or knee disease; spinal caries; pelvic disease; enlargement of the inguinal glands; aneurysm of the iliac artery; and the causes of meralgia paræsthetica (*q.v.*).

8. Rectal Neuralgia.—*Special Causes.*—Constipation; impacted fæces; straining at stool; sexual excitement; tumors; foreign bodies; enlarged prostate; varicose veins; hemorrhoids; varicocele; ulcer of the rectum; pressure from a pregnant uterus.

9. Coccydynia.—See Coccydynia.

10. Metatarsalgia.—See Part 10, Orthopædics.

11. Visceral Neuralgias.—See Gastralgia; Enteralgia; Angina Pectoris.

12. Dermatalgia.—See Neuralgia of the Skin, Part 10.

13. Sciatica.—*Special Causes.*—Lumbago (*q.v.*, under Myalgia); exposure to cold and wet, especially during fatigue; gout; rheumatism; tabes dorsalis; pressure upon the nerve caused by sitting, rectal or sigmoid accumulations, pelvic inflammation, uterine or ovarian tumors, uterine displacements, pregnancy, cauda equina tumors, the fetal head during labor, lymphadenomata, bone disease (tumors, etc.); strain and relaxation, sometimes dislocation of the sacro-iliac joint (see Orthopædics, Part 10); traumatism (lifting heavy weights, fall upon the buttocks, fracture, etc.); lesions of the hip joint (arthritis deformans, tuberculosis); chronic spinal arthritis; knee-joint disease; prostatitis; pelvic venous stasis due to chronic myocardial insufficiency, hepatic disease, varicose veins of the legs, etc.); flat-foot. (Always make a rectal examination.)

A. General Treatment.—Make a careful examination into the cause of the affection. Correct all remediable abnormalities. Strengthen the patient's stamina by a hygienic regimen, *e.g.*, adequate rest and recreation, regular hours of eating and sleeping, fresh air day and night, a daily tepid or hot bath in a warm room, followed, in appropriate cases, by a cold spinal douche, preferably before breakfast, a glass of water one hour before meals, regulation of the bowels, a generous diet, including, perhaps, codliver oil and malt extract if the patient is feeble, a plain, bland, restricted diet if the patient is plethoric, and finally tonics, such as arsenic, iron, strychnine, quinine, calcium, and glycerophosphates (see Drugs, Part 11). General massage is invigorating. Body hot air treatment twice a week is well recommended. A change to a warm, dry climate may prove of the greatest benefit.

Palliative and Remedial Drugs.—Phenacetin, gr. v–x, with or without salol, gr. v–x, repeated if necessary.

Antipyrin, gr. v–xv, with strychnine, gr. $\frac{1}{30}$, to avoid cardiac depression.

℞ Phenacetini vel antipyrinæ..... gr. lxxii (gr. iii per dose)
Caffeinæ citratis..... gr. xii (gr. ss per dose)
Camphoræ monobromatæ..... gr. xii (gr. ss per dose)
Sodii bicarbonatis..... gr. xlviii (gr. ii per dose)
Misce et fiant capsulæ 24.
Sig.—One every half hour for no more than six doses.

Aspirin, gr. x, t.i.d.

℞ Sodii salicylatis..... ℥ii (gr. xv per dose)
Sodii bicarbonatis..... ℥ii (gr. xv per dose)
Aquæ, q.s., ad..... ℥iv
M. Sig.—One tablespoonful, well diluted, t.i.d.

℞ Aspirin..... gr. vii
Codeinæ..... gr. ½
Trional..... gr. vii
M. Sig.—Take at bedtime.

℞ Quininæ bisulphatis,
Aspirin, aa..... gr. v
M. et fiant capsulæ 12.
Sig.—One capsule every five hours.

℞ Butylis chlorali hydrati ℥iiss (gr. v per dose)
Glycerini..... ℥v
Aquæ, q.s., ad..... ℥iv
M. Sig.—One dram every half hour for three or four hours.

Alcohol: hot whiskey or brandy punch.

Nitroglycerin, gr. $\frac{1}{150}$ to $\frac{1}{100}$, or sodium nitrite, gr. i–ii, every two hours, until the blood tension is lowered or flushing occurs.

Aconitine, "the best remedy," says Starr, "the French pills of Chapoteaux

being the best preparation." Prescribe one pill, gr. $\frac{1}{500}$, every four hours, together with strychnine, gr. $\frac{1}{50}$ to counteract the depressant action of the aconitine upon the heart. Each day decrease the interval one-half hour until one pill is being given every two hours, or until tingling of the tongue and fingers, a sense of general weakness and feebleness of the pulse are evident." After the first two days, when the aconitine is being given every two hours, give gr. $\frac{1}{100}$ of strychnine with each dose, or if strychnine produces twitching, reduce the dose, or substitute caffeine, gr. ii, or sparteine, gr. $\frac{1}{50}$. Warn the patient against making any sudden muscular effort, and allow very little walking. (Starr.)

Tr. Gelsemii, the next best remedy, says Starr, 10 drops every three hours, increased by one drop at each dose until the patient perceives a "heaviness of the upper eyelids and a difficulty in opening the eyes." This dose may be continued for several days. (Starr.)

Potassium iodide. Try the iodides for three or four days in all cases, says Yeo.

Morphine, gr. $\frac{1}{8}$ to $\frac{1}{4}$; or Schlesinger's analgesic (Part 11).

Palliative and Remedial Local Measures.—Counter-irritation, etc., by means of the Paquelin cautery; daily dry-cupping (*q.v.*) along the course of the affected nerve; the mustard poultice (*q.v.*); tincture of iodine; ung. capsici; ung. mentholis; the liniments of belladonna, chloroform, and turpentine; methyl salicylate; camphor and chloral; sprays of ether and ethyl or methyl chloride; hot poultices; hot sand, salt, or water bags; filiform hot water douches; ironing with a hot iron; hot air douches; fly blisters (see Cantharides in Part 11) over tender points every other day; exposure to a 32-candlepower electric light in a large parabolic reflector for about ten minutes daily; very hot air (250° to 300° F.) for twenty minutes daily (the best treatment of neuritis); massage; galvanization, with a large positive electrode over the painful point and the negative electrode of double the size over the spine: 35 to 50 milliampères for fifteen to thirty minutes daily for a long period (one of the best "palliative if not curative" measures, says G. Woolsey).

Ionic medication (*q.v.*, under Inflammation). The electrolytes employed in the treatment of neuralgia or neuritis are quinine hydrochlorate, 1 per cent. solution, and sodium salicylate, 1 to 2 per cent. solution. The quinine, being kathionic, is placed at the anode; the salicylate, being anionic, is placed at the cathode. A current of 20 to 30 to 50 milliampères is employed for thirty minutes, three times the first week, twice a week thereafter (Lewis Jones).

Gradually increased digital pressure upon the nerve at its point of emergence.

Injection into the affected nerve, near its point of emergence, of 1 to 2 c.c. of 80 per cent. alcohol, or 0.5 to 1 c.c. of a 2 per cent. aqueous solution of osmic acid.

Stretching of the affected nerve.

Avulsion or resection, eligible in cases in which the neuralgia is confined to a single nerve branch, *e.g.*, the supraorbital, the infraorbital, or the inferior dental branch of the fifth nerve (avulsion relieves usually for about two years or longer).

Röntgentherapy (*q.v.*).

B. Special Treatment.—1. Trigeminal Neuralgia.—a. Injection of the maxillary division of the fifth nerve through the foramen rotundum, or of the mandibular division through the foramen ovale, or of both divisions, with strong alcohol. The operation may be done under general anæsthesia, or better under euphoria produced by a hypodermic of morphine, gr. $\frac{1}{3}$, and hyoscine hydrobromide, gr. $\frac{1}{150}$, given twenty minutes before the operation. The operation requires experience. To reach the foramen rotundum introduce the needle against the lower border of the zygoma, "0.5 cm. behind a vertical line corresponding to the posterior border of the orbital process of the malar bone," and direct it "slightly upward and forward, a distance of 4.5 to 5 cm.," into the pterygomaxillary fossa, glancing the superior surface of the pterygoid plate which lies about 1 cm. external to the foramen rotundum (Frazier). To reach the foramen ovale introduce the needle against the lower border of the zygoma 2.5 cm. in front of the external auditory meatus, and direct it slightly upward and backward a distance of 4 to 4.5 cm. (Frazier).

There is less danger, in this procedure, of subsequent corneal destruction, than in excision of the Gasserian ganglion. Relief is afforded for about a year, more or less.

b. Avulsion of the sensory root gives permanent relief. It is preferable to removal of the ganglion.

c. Avulsion of a single branch of the nerve, *e.g.*, supraorb., supratroch., ling., auriculotemp., buccal, infraorb., or inf. dental. It affords relief for about two years.

d. Injection of the above branches with alcohol is sometimes effectual.

e. Local application of cocaine, 2 to 4 per cent., to the conjunctiva.

2. Brachial Neuralgia.—Support the arm in a sling. Correct droop-shoulder by strapping the scapulæ together with adhesive plaster, or by the use of braces. Operate for flexed scapula if conservative measures fail (see Round Shoulder, in Part 10, Orthopædics). If ionization is employed, place the active electrode above the clavicle, external to the sterno-mastoid muscle, the other electrode over the deltoid or lower down the arm. Nerve resection is a measure of last resort.

3. Intercostal Neuralgia and Mastodynia.—Strap the affected half of the chest during forced expiration from the spine to the sternum with one or several overlapping broad bands of adhesive plaster.

In mastodynia, the nerves may be stretched by slowly lifting the whole breast for thirty or more seconds several times a day.

4. Testicular Neuralgia.—See Part 3, Genito-Urinary Diseases.

5. Crural Neuralgia.—See Meralgia Paræsthetica.

6. Rectal Neuralgia.—Try the injection of a 1 per cent. solution of quinine and urea hydrochloride (see Part, 11), "just within the anus and the surrounding skin" (L. Eliot). Eliot apparently cured a case by repeating this injection after three days, then after three weeks, then two months, then six months.

7. Sciatica.—(*a*) *Acupuncture*, or transfixion of the nerve along its course by four to six steel needles, about three inches in length, to be left in only a few minutes.

(*b*) "*Nerve Blocking*," or the injection into the painful region of the nerve, usually midway between the trochanter and the ischial tuberosity, of 10 to 15 c.c. of a 1 per cent. solution of eucaine in an 0.8 per cent. solution of sodium chloride (Lange), or 2 c.c. of 2 per cent. eucaine, followed shortly by 100 c.c. of sterile 0.9 per cent. saline at 100° F. (quoted by C. M. Hinds Howell), or 1 per cent. quinine and urea hydrochloride, using a needle 8 to 10 cm. long, and introducing it until the occurrence of sharp pain indicates that the nerve has been reached. Repetition of the injection every eight days for three or four times is often curative.

(*c*) *Nerve Stretching*, accomplished by dorsiflexion of the foot, extension of the leg, and flexion of the thigh, with the patient on his back; or, better, by exposure of the nerve through an incision just below the edge of the buttock. The nerve is freed for a certain distance, and both the peripheral and central ends gently and continuously pulled, while an assistant flexes and then extends the limb to the utmost. The entire length of the nerve should be stretched.

(*d*) *Ionization* (*q.v.*). Employ, in sciatica, a long lead negative electrode over the nerve, and place the positive electrode over the abdomen, thigh, or leg. Use a hot 3 per cent. solution of sodium salicylate or sodium hyposulphite (or thiosulphate). Employ a current very slowly increased to 200 milliampères for sixty to ninety minutes every two or three days at first. One to fifteen seances are required. (Lewis Jones.)

(*e*) *Fixation of the Limb* by means of a long splint extending from the axilla to the heel, or by means of long hot sandbags, is of value in neuritis. The limb should be kept warm. It may be wrapped in cotton-wool. Once or twice during the day the joints should be gently flexed to prevent stiffness.

(*f*) *Hot Air* is said to be the best treatment of neuritis: 250° to 300° F. for twenty minutes daily.

(*g*) "*An Orthoform Suppository* (gr. xv) pressed well against the prostate has been known to relieve a severe sciatic neuralgia."

(*h*) *X-radiation*, (*q.v.*) from the posterior aspect, from the hip to the knee, using a hard tube, 8 to 10 Bauer or harder, and a 1 mm. aluminium filter, or else ⅓ pastille dose, three times a week, may be beneficial. (Knox.)

Neurasthenia; Psychasthenia.—Gr. νεῦρον nerve; ψυχή mind + ἀσθένεια debility. A chronic functional affection of the nervous system, characterized by undue irritability and rapid and excessive fatigue following mental or physical exertion or other form of stress, such as emotion, worry, disease, etc. The following varied symptomatology is encountered: lassitude, deficient power of concentration, defective will-power, various forms of anxiety, various phobias, involuntary mental activity, irritability, egoism, depression, insomnia, headaches, pressure in the head, dizziness, backaches, limb-aches, hyperæsthesiæ, paræsthesiæ, muscular weakness, exaggerated knee-jerks, atonic dyspepsia, circulatory disturbances (palpitations, tachycardia, precordial pain, dyspnoea and dizziness on slight exertion or excitement, coldness of the hands and feet, flushing, sweating), genital disturbances (nocturnal emissions, premature ejaculation, depression after intercourse, impotence, painful testicle).

Exclude organic disease; exclude incipient paresis. Do not confuse neurasthenia with hypochondriasis, in which the patient entertains delusions regarding the condition of his health, imagining that he is ill, but pre-

senting no symptoms of chronic fatigue. Neurocirculatory asthenia (irritable heart) is sometimes caused by pulmonary tuberculosis or hyperthyroidism.

Etiology.—The cause of neurasthenia is either a congenital weakness, hereditarily transmitted or prenatally acquired, or some post-natal weakening influence, such as overwork, loss of sleep, worry, traumatism, a "sudden change in one's habit of life," excessive indulgence in alcohol, tobacco, morphine, and venery, eyestrain, unphysiological living in general, and disease (dyspepsia, constipation, visceroptosis, arteriosclerosis, anæmia, nasopharyngeal disease, sinusitis or some other suppurative process, syphilis, genital disease, myocarditis, influenza, typhoid fever, sunstroke or heat exhaustion, etc.).

Prognosis.—This is, as a rule, relatively favorable, but relapses are prone to occur. In severe cases, says Osler, at least six months of rest and treatment are required. "The prognosis in traumatic cases," says Starr, "is never good."

Treatment.—Examine the patient carefully, and attend to all possible exciting influences (see Etiology). In mild cases it may be sufficient to enjoin adequate rest of mind and body, perhaps a change of scene, light play out of doors, regular hours of eating and sleeping, rest before and after meals, regulation of the bowels, ten hours of sleep, a daily cold spinal douche before breakfast while standing in warm water in a warm room, an abundance of nourishing and easily digestible food, and tonics, *e.g.*, arsenic, iron, nux vomica, glycerophosphates (see Drugs, Part 11.)

℞ Zinci phosphidi..... gr. i (gr. $\frac{1}{30}$ per dose)
Extracti nucis vomicæ. gr. v (gr. $\frac{1}{6}$ per dose)
Extracti gentianæ, q.s.
Ft. pilulæ no. 30. Sig.—One pill t.i.d. (Forchheimer.)

A long vacation away from home once a year is of great prophylactic value.

Severe cases require the Weir Mitchell rest treatment, which consists of isolation, absolute rest in bed, superalimentation, massage, electricity, and baths, and is best carried out in a sanitarium. The following regimen is taken largely from C. W. Burr:

It may be best to confine the patient for from two to six weeks to an exclusive milk diet, beginning with skimmed milk, either predigested (see pepsin or trypsin in Part 11), or containing a tablespoonful of lime water to each glassful, 3 oz. every two hours from 7 A. M. to 9 P. M., the next day 4 oz., and so on up to 8 to 10 oz. every two hours, or 2 to 2½ quarts daily. A little carbohydrate gruel (oatmeal, farina, etc.) may be added to the milk.

After a time, gradually enlarge the dietary. Replace the 7 A. M. milk with a cup of cocoa, and at 8.30 A. M. give a breakfast of raw or soft-boiled eggs, toasted bread or zwieback, butter, milk and cream, and fruit. After several days, add a noon dinner of meat, vegetables, soup, bread, butter, and dessert. After about a week, add a light supper, still continuing the milk three times a day, *i.e.*, between meals and at bedtime. Water should be taken freely, say a glassful one-half hour before meals. Tea, coffee, alcohol, and tobacco should be avoided.

Binswanger's menu is as follows:

7 A. M.—Glass of boiled milk, or cocoa made with half milk and half water, or oat-cocoa; 2 to 3 crackers or zwieback.

9 A. M.—Cup of bouillon; meat ⅔ oz.; toast or graham bread, 1 oz.; butter, ⅓ oz.

11 A. M.—Milk, 4½ to 6 oz., with the yolk of an egg or a tablespoonful of malt extract.

1 P. M.—Soup thickened with oatmeal, barley, or rice, 2½ to 3½ oz.; roast, 1¾ oz., potatoes, ⅓ oz.; vegetables, ¼ to ⅓ oz.; rice pudding, ⅔ oz.; compote 1¾ oz.

4 P. M.—Cocoa or malted milk, 4½ oz.; 2 crackers.

6 P. M.—Meat, ⅔ oz.; Graham bread or toast, ⅓ oz.; butter ⅙ oz.

8 P. M.—Soup, 4½ oz., containing butter, ⅓ oz., and egg yolk, oatmeal, barley, etc.

9.30 P. M.—Malted milk, 4½ oz.

The above quantities are gradually increased, until, at the end of two weeks, the milk, cocoa, and soup are doubled, and the meat, bread, and butter trebled, richer compotes given, and also fresh vegetables and simple puddings.

The following foods are credited with special value for neurasthenics, viz., onions, garlic, leeks, horseradish, shalots, chives, mustard, watercress, and spinach.

A warm sponge bath should be given after the cocoa and before breakfast, later a warm plunge, and later a cool douche while standing in warm water, or a cool plunge.

If not unpleasant to the patient, daily general massage may be practiced at about 3 P. M., or, if there is insomnia, at bedtime. It should be gentle at first, and of about thirty minutes' duration, gradually increased to one hour. Absolute rest for an hour afterward should be observed. After a time, resistance movements are practiced; and after the patient is out of bed, light gymnastic exercises.

Electricity is of least importance. It may be applied, say, at 11 A. M. Employ a slowly interrupted faradic current, not strong enough to produce pain. Place the electrodes a few inches apart over the muscles and elicit three or four contractures from each muscle, taking about forty-five minutes to go over the entire body. The treatment may be terminated by placing a small electrode over the nape of the neck and a large one covering both soles and passing a rapid current for ten minutes.

Isolation should at first be absolute but for the visits of the nurse and physician; and the normal mode of life should later be resumed very gradually. The patient may be read to by the nurse for half an hour twice daily, after the noon meal and at 8 P. M. On leaving his bed, the patient should be allowed up an additional half-hour each day until he is up all day.

For the treatment of dyspeptic symptoms, see Dyspepsia, Nervous.

For obstinate constipation, employ abdominal massage, and, if deemed advisable, an occasional dose of a mild laxative, such as cascara, (see Constipation).

For visceroptosis, employ a binder (see Visceroptosis).

For nervous unrest, one may prescribe, if deemed advisable, sodium bromide, about gr. xv, well diluted, four times daily; or compound sumbul pill, t.i.d. (Part 11).

For insomnia, employ the warm wet pack, and, if necessary, drugs (see Insomnia).

For depression are recommended codeine phosphate, nitroglycerin, and atropine.

For pains, employ the thermo-cautery.

Burr says that improvement should be manifest at the end of six weeks.

An attempt should be made to instil into the patient a new interest in life, a new viewpoint. It is well for the patient to take up some hobby, something to distract the mind from the petty worries and annoyances of life. Outdoor play should be indulged in. The hypochondriac, indeed, may need enforced activity instead of inactivity.

The traumatic neuroses and psychoses are treated as neurasthenia or hysteria.

Neuritis, Alcoholic.—See Neuritis, Multiple.

Interstitial Hypertrophic Progressive, of Childhood.—See Interstitial Hypertrophic Progressive Neuritis of Childhood.

Neuritis, Localized.—Gr. *νεῦρον* nerve + *-ιτις* inflammation. Neuritis is characterized by intense pain in the course and distribution of the involved nerve, undue tenderness on pressure over the nerve, pain on stretching the nerve, and perhaps hyperæsthesia or anæsthesia, paræsthesia, muscle twitching or paralysis in the distribution of the nerve. (For localizing symptoms, see Nerves, Peripheral.)

Etiology.—Cold; traumatism; extension of a neighboring inflammation; spinal caries; arthritis; infection, including the infectious diseases; toxic conditions, *e.g.*, gout, diabetes, chronic nephritis, toxæmia of pregnancy, chemical poisons; anæmia; arteriosclerosis; tuberculosis; syphilis; aneurysm; tumors; etc.; practically all the causes of multiple neuritis (*q.v.*; see also Neuralgia).

Prognosis.—This is usually good in acute cases, which may recover in a few weeks. Chronic cases may last for months. Diabetic neuritis clears up when the sugar disappears from the urine.

Treatment.—Attend to the cause. In the acute stage, with pain, tenderness and fever, cover the part with cotton-wool, and keep it at rest, in an elevated position, by means of splints. Once or twice during the day the joints should be gently flexed to prevent stiffness. Ice packs may be applied, or hot poultices, hot sand, salt, or water bags, mustard poultices (Part 11), the Paquelin cautery, a 32-candle-power electric light in a large parabolic reflector, employed for about ten minutes daily, daily dry-cupping (*q.v.*) along the course of the nerve, or best of all, very hot air (250° to 300° F.) for twenty minutes daily. Ionic medication may be employed as described under Neuralgia. Mercury in small doses, and the salicylates are recommended. (See Drugs, Part 11). The bowels should be kept active. For pain, employ the drugs enumerated under Neuralgia.

Guard against wrist-drop and resulting stretching of the paralyzed muscles by means of elastic straps fastened from the back of a glove covering the hyper-extended hand to a wrist-band. Guard against foot-drop by means of sandbags or a soft rubber boot.

After the acute symptoms have subsided, begin measures for the restoration of tone to the paralyzed muscles. Apply to each paralyzed muscle, for five minutes daily, the interrupted galvanic current, of a strength of about 5 to 10 milliampères, or just enough to produce a response, and not enough to cause pain. Employ also massage, if not painful, to the healthy as well as to the affected muscles, for one-half hour daily; and also passive and active movements. By these measures, and by extension, contractures due to shortening of the healthy muscles is prevented.

Strychnine may be given in increasing doses. Nerve stretching (see Neuralgia) is sometimes of benefit.

In traumatic cases which show no improvement after three months' treatment, cut down upon the nerve, remove scar tissue, and unite severed nerve ends by means of nerve flaps or a tube of decalcified bone.

For brachial neuritis, see Brachial Plexus.

For neuritis of the facial nerve, see Facial Paralysis.

For sciatic neuritis, see Sciatica, under Neuralgia.

See also Nerves, Peripheral, Affections of the, and Neuralgia.

Neuritis, Multiple; Polyneuritis.—Gr. πολύς many + νεῦρον nerve. A bilateral, usually symmetrical, degenerative affection of the peripheral nerves, affecting chiefly the distal segments of the limbs, characterized by sensory and flaccid motor paralysis, with stocking-shaped and glove-shaped areas of anæsthesia, and ankle-drop and wrist-drop, of usually gradual onset, preceded, sometimes for months, by numbness, tingling, pains, muscle cramps, and tenderness in the extremities. A loss of faradic irritability, and a marked decrease in the galvanic irritability of the muscles and nerves occur (reaction of degeneration); and the tendon reflexes are lost. Motor incoördination, due to loss of sensation, sometimes predominates (pseudo-tabes). Neuralgic pains usually persist throughout the illness, and the muscles are very tender.

In alcoholic neuritis, and sometimes in other forms, there is usually mental disturbance: weakness of memory, disorientation, or delusions of time, place, and persons, tendency to confabulation and to indulge in pseudo-reminiscences, perhaps hallucinations (Korsakow's psychosis).

The acute febrile or infectious polyneuritis or meningomyeloneuritis which follows exposure to cold or overexertion, may simulate Landry's acute ascending paralysis or subacute myelitis (Osler). It is characterized by an initial moderately febrile period of two to four days duration, with headache, backache and vomiting, followed from three days to a month after the subsidence of the fever by bilateral, more or less symmetrical paralysis, not limited to the distal portions of the limbs, and in nearly all cases involving the face. Anatomically, degenerative changes are observed in the peripheral nerves, spiral roots, posterior root ganglia, ventral horn cells, and Betz cells of the cortex. The mortality is high.

Etiology.—Certain poisons, *e.g.*, alcohol, ether, arsenic, lead, mercury, copper, zinc, silver, phosphorus, carbon monoxide, carbon bisulphide used in rubber factories, dinitrobenzene, naphtha, trional, sulphonal, chloretone, creosote phosphate administered to phthisical patients, ptomaines, etc.; toxæmia of pregnancy; infection, *e.g.*, diphtheria, typhoid fever, typhus fever, Malta fever, scarlet fever, measles, mumps, whooping-cough, smallpox, malaria, pneumonia, influenza, leprosy, septico-pyæmia, erysipelas, gonorrhœa; overexertion and exposure to cold; cachectic states: anæmia, malignant disease, syphilis, tuberculosis, marasmus, senility, etc.; diabetes; gout; beri-beri. A very rare recurring polyneuritis of unknown cause is described.

Prognosis.—As a rule, the paralysis is progressive for several weeks, then remains stationary, and eventually, after one or two months or longer from the time of onset, improvement begins. When improvement once begins, complete recovery may usually be expected in from four to six months or longer. Diabetic neuritis soon clears up when the sugar has disappeared from the urine.

Treatment.—Attend to the cause. Employ a water-or air-mattress, if possible, and bed-cradle to take the weight of the bed-clothes off the tender muscles. Guard scrupulously against bed sores (*q.v.*). Keep the bowels active, and give water freely. The diet should be light but nutritious.

Envelop the limbs in thick cotton-wool, and, for pain, employ the remedies described under Neuralgia. For restlessness employ the bromides (Part 11) about gr. xv, well diluted, four times a day.

To guard against contracture, keep the limbs extended, the feet at right angles to the legs by means of sand-bags, padded boards, or a light rubber boot, and the wrists overextended by means of gloves attached from the back to a wrist-band with elastic straps.

When improvement begins to set in, and the muscles are no longer tender, apply interrupted galvanism for three or four minutes to each muscle every other day, with the weakest current possible to produce a contraction. Employ also massage, at first very gently, and passive and active movements. These measures, practiced systematically, will usually overcome contractures. Tenotomy is rarely necessary.

Strychnine, beginning with gr. $\frac{1}{60}$ to $\frac{1}{40}$, t.i.d., and gradually increasing the dose (see Part 11), is of value as an aid in restoring tone.

As tonics, one may prescribe arsenic in

small doses, iron, quinine, glycerophosphates, or codliver oil.

Kerley gives, to a child of five to ten years, the following tonic for ten days, alternating with codliver oil for five days:

℞ Strychninæ sulphatis. gr. ¼ (gr. ⅟₁₂₀ per dose)
Extracti ferri pomati.. gr. x (gr. ⅓ per dose)
Quininæ bisulphatis.. ℥i (gr. ii per dose)
M. et ft. capsulæ no. 30.

Sig.—One after each meal. (For constipation, add to each capsule ext. cascaræ, gr. ⅓ to ½). (Kerley.)

Neuromyositis.—Gr. *νεῦρον* nerve + *μῦς* muscle + *-ιτις* inflammation. See Myositis.

Neuroses, Occupation.—See Cramps, Professional.

Traumatic.—See Hysteria; and Neurasthenia.

Night Blindness.—See Part 6, Eye Diseases

Night Sweats.—See Hyperidrosis in Part 5, Skin Disease.

Night Terrors.—**Causes.**—Neurotic temperament; indigestion; heavy supper; constipation; obstruction to breathing due to adenoids, enlarged tonsils, coryza, etc.; over-study; eyestrain; malnutrition and anæmia; dentition; pin-worms; elongated foreskin; heavy bed-covering.

Treatment.—Correct the cause. The patient should eat an early light supper, and should not study in the evening. The bedroom should have an abundance of fresh air and the bed-covering should be light in weight. Sodium bromide (Part 11) in hot water may be given occasionally in bad cases; Forchheimer says, every night for about a week.

Ninth Nerve.—See Glosso-Pharyngeal Nerve.

Nocardiosis.—See Actinomycosis, in Skin Diseases, Part 5.

Noma.—Gr. *νομή* feeding. See Stomatitis, Gangrenous.

Nosebleed.—See Epistaxis, in Part 8, Nose Diseases.

Nutritive Enemata.—See Rectal Feeding.

Nyctalopia; Night Blindness.—See Part 6, Eye Disease.

Nycturia.—Gr. *νύξ* night + *οὖρον* urine. A greater excretion of urine at night (between 7 P. M. and 7 A. M.) than during the day. Normally, much more urine is excreted during the day than at night. Nycturia is usual in œdematous conditions of hepatic, cardiac, or renal origin, but especially in cardiac insufficiency.

Nystagmus.—See Part 6, Eye Diseases.

Obesity.—L. *obes'itas*, fatness. A disorder of fat metabolism manifested by an excessive accumulation of fat in the body.

Etiology.—Overeating; alcohol; chronic constipation; sedentary habits; heredity; puberty; marriage; pregnancy; lactation; menopause; deficient development of the genital organs; castration or double oöphorectomy; anæmia with resulting insufficient oxidation due to deficiency of hæmoglobin; hypopituitarism (see Acromegaly); thyroid insufficiency (?: see Adiposis Dolorosa).

Treatment.—Attend to the cause. Prescribe saline laxatives (Part 11) or laxative mineral waters as required, regular hours of eating, fresh air day and night, a daily bath, and daily graduated exercise out of doors. Hot baths are indicated for plethoric and gouty subjects; brief warm baths in myocardial disease, and where œdema is present; and cold baths for flabby, toneless individuals. While taking a cold bath the patient should rub his body vigorously and exercise as far as practicable to prevent uncomfortable chilling. The bath should be taken in a warm room, and at first cold douches may be taken while standing in warm water. The bath is best taken before breakfast, never shortly after a meal. Local deep massage is beneficial. Where the heart is weak, active exercises should be preceded by rest and massage, then passive movements, resisted movements, Nauheim baths, etc., as described under Cardiac Insufficiency. Drugs of the digitalis group are apt to be dangerous, owing to the possible existence of atrophy and fatty infiltration of the heart-muscle.

In lieu of other forms of exercise and sports, a healthy individual should walk one or two hours a day, 4½ to 5 km. (3⅛ miles) an hour. To reduce abdominal adiposity, employ the following exercise immediately on rising, with the windows open, and the clothing loose: lying flat upon the back, with arms folded across the chest and feet weighted or strapped to the floor, rise slowly to the sitting posture without bending the knees, and repeat this movement three to ten or more times in succession; next, raise both legs, without bending the knees, to a right-angle with the trunk.

For anæmia, prescribe iron, and perhaps arsenic (see Part 11). For obesity associated with amenorrhœa, Howard A. Kelly prescribes lutein tablets, gr. v, t.i.d. Pituitary or hypophyseal (anterior lobe) extract, gr. viii–x, per diem, by mouth, would seem also to be indicated here (see Acromegaly).

Thyroid extract may be tried cautiously in small doses, gr. ss, twice daily, gradually increased to gr. ii, twice or thrice daily (no

more than gr. v, t.i.d.). It should at once be discontinued on the appearance of the following symptoms, viz., weakness, restlessness, headache, vertigo, syncope, palpitation, tachycardia (see Myxœdema.) The danger in using thyroid extract lies in the fact that the heart of obese individuals is apt to be atrophied, the coronary vessels sclerosed, and the heart's action impeded by fatty infiltrates. Many good observers do not recommend thyroid extract unless myxœdema is present. Von Noorden, however, advocates its use.

Dieting and exercise, however, occupy first place, and particularly dieting. Fats, starches, sugars, and salt should be restricted, but not proteids. Œrtel, Schweininger, and others restrict fluids; Von Noorden, Ebstein, and Gærtner allow fluids *ad libitum*. Saccharin, crystallose, or saxin (see Part 11), may perhaps be substituted to some extent for sugar. Green vegetables (spinach, Brussels sprouts, kale, cabbage, string beans, etc.), skimmed milk, and fruits (oranges, lemons, raw apples, raw peaches, grapes, cherries, berries) are the preferable foods. The following articles should be avoided, viz., alcohol, tea, coffee, aërated beverages, potatoes, turnips, carrots, beets, parsnips, sweet potatoes, celery, oatmeal, rice, hominy, starch, peas, beans, lentils, raw, canned, potted, smoked, and salted meats and fish, fried foods, pork, veal, rich soups, stews, hashes, meat extractives, liver, kidney, sweetbreads, sausage, duck, goose, lobsters, crabs, salmon, mackerel, sardines, herring, bluefish, hot bread, cakes, pies, pastry, spices, nuts, candies.

Bulky and therefore satisfying foods with low nutritive value are desirable, and the food should be well chewed in order that the appetite may be the more quickly assuaged. Gærtner praises boiled beef because of its satisfying bulk and its relative tolerance by gouty subjects. He regards bread as the chief cause of obesity (excluding alcohol), and favors absolute bread abstinence as a rule, or only 1 to 2½ ounces for breakfast. In children, meat in excess as well as bread, is another frequent cause of obesity, says Gærtner. He allows boiled or baked potatoes.

Iodine preparations, minute doses of camphor, peppermint lozenges, and menthol tablets are credited with anorexic properties.

The following modified Œrtel's dietary (Œrtel's dietary consists of 170 gm. albumin, 120 gm. carbohydrate, and 45 gm. fat in twenty-four hours) may be used as a guide, bearing in mind that about 16 calories per pound of normal body-weight (see Table of Average Weight to Height at Different Ages, under Food Values) are required each day for persons doing ordinary light work (see Table of Caloric Food Values).

BREAKFAST.

Wheaten bread, 1½ oz.	123 calories
Soft-boiled eggs, one or rarely two	75–150 calories
Milk, 1 oz.	21 calories
Sugar, 1 dram.	16.4 calories
Water, as desired,	
Total.	235.4–310.4 calories

Rye bread or pumpernickel may be used instead of wheat bread; it is less nutritious.

LUNCHEON.

Beefsteak, tenderloin, 5 oz., weighed after cooking.	405 calories
Or sirloin, 5 oz.	275 calories
Or fowl, 5 oz.	about 250 calories
Soft-boiled eggs, one or two.	75–150 calories
Green salad (including cucumbers, radishes, asparagus, artichokes, cauliflower, watercress, endive, sorrel, salsify, lettuce, tomatoes), 1 oz.	10 calories
Cheese, American, 1 dram.	16 calories
Bread, 1½ oz.	123 calories
Fruit (apples, berries, pears, plums, cherries, oranges), 4 to 5 oz.	
Water as desired,	
Total.	474–704 calories

DINNER.

Clear bouillon, 3½ oz., or as much as desired,	
Non-fatty fish, 3½ oz.	147 calories
Beefsteak, sirloin, 6 to 8 oz.; or roast lamb; or poultry.	330–440 calories
Green vegetables 1½ oz.	15 calories
Bread, 1 oz.	82 calories
Fruit, 3 to 4 oz.	about 70 calories
Sugar, 1 dram.	16 calories
Water as desired,	
Total.	681–791 calories
Daily total.	1390–1805 calories

This is the approximate number of calories required for one weighing about 100 pounds. From this dietary can be readily calculated the dietary for one of any weight.

A strictly adequate quantitative dietary is, of course, impossible, because one's nutritional needs depend upon other immeasurable factors besides the age and normal weight, *e.g.*, the digestive and assimilative powers, the metabolic activity, and the degree of mental, nervous, and muscular exertion. Moreover, the caloric values of the various foods recorded are not accurate. The dietaries, therefore, should be used merely as guides, and each patient should be treated according to his or her needs.

Have the patient visit the office once a week to be weighed and interviewed, and to see that the reduction in weight is not too rapid. Gærtner considers a daily decrease of 0.15 to 0.2 per cent. as the ideal.

According to Gærtner, the obesity treatment is permissible at twelve to thirteen years of age in girls, and fifteen to sixteen years of age in boys; the upper limit of age is indeterminate.

After the desired reduction of weight has been attained, which should not ordinarily be the "normal" weight given in the table (under Food Values), an ordinary, well-balanced, temperate diet is allowed. The normal amount of each food element required by the individual, per pound of the weight normal to his height and age, per day, is, according to Ortner, 12 grains of protein, 5½ grains of fat, and 48 grains of carbohydrate (or 1.7 gm. of protein, 0.80 gm. of fat, and 7.1 gm. of carbohydrate per kilo; 1 gm. proteid = 4.1 calories; 1 gm. carbohydrate = 4.1 calories; 1 gm. fat = 9.3 calories).

Brief courses of starvation (5 – 6 + days), with or without the free drinking of purgative waters (see under Constipa ion), may be of value in plethoric cases.

Obstetrical Palsy. — See Hemorrhage, Meningeal, in the New-Born, and Upper Arm Type of Paralysis, under Brachial Plexus.

Obstruction, Biliary.—See Cholelithiasis.

Bronchial.—See Bronchostenosis.

Intestinal.—See Intestinal Obstruction.

Laryngeal.—See Part 9, Throat Diseases.

Œsophageal.—See Œsophageal Stenosis or Stricture, and Foreign Bodies, in Throat Diseases, Part 9.

Tracheal.—See Tracheal Obstruction.

Ureteral.—See Hydronephrosis.

Obstructive Jaundice.—See Jaundice.

Obturator Nerve.—See Lumbar Plexus.

Occipito-Cervical Neuralgia.—See Neuralgia.

Occupation Neuroses.—See Cramps, Professional.

Ochronosis.—Gr. *ὠχρός* yellow + *νόσος* disease. A rare metabolic disorder, characterized by blackish discoloration of the skin, sclerotics, cartilages, fibrous tissues, and the urine, the latter due to alkapton in congenital cases (see Alkaptonuria), and to carbolic acid poisoning in acquired cases.

Oculomotor Nerve.—See Motor Nerves of the Eyeball.

Œdema.—Gr. *οἴδημα* swelling. **Causes.**—Cardiac, renal, hepatic, or pulmonary disease; venous thrombosis; arterio-venous aneurysm; aneurysm of the ascending arch; varicose veins; flat-foot; obesity; anæmia; purpura; leukæmia; Hodgkin's disease; scurvy; exophthalmic goitre; cancer; trichiniasis; lymphatic obstruction, and elephantiasis; dermatomyositis; local inflammation; disuse, as after fracture; pelvic disease (tumors, etc.); pregnancy; paralysis; neuralgia and neuritis; anthrax; angioneurotic œdema; scleroderma; beri-beri; œdema neonatorum; profuse diarrhœa; Milroy's disease, or persistent hereditary œdema of the legs of unknown cause (the œdema is permanent, with occasional acute attacks accompanied by chill, fever, and increased swelling; the œdema may be kept within bounds by bandaging).

Œdema, Angioneurotic.—See Part 5, Skin Diseases.

Cardiac.—See Cardiac Insufficiency.

Glottic.—See Part 9, Throat Diseases.

Hepatic.—See Cirrhosis, Portal, of the Liver.

Hereditary, of the Legs, or Milroy's Disease.—See under Œdema.

Laryngeal.—See Part 9, Throat Diseases.

Lids.—See Part 5, Skin Diseases.

Malignant.—See Anthrax, in Skin Diseases, Part 5.

Neonatorum.—See Part 5, Skin Diseases.

Pulmonary.—See Pulmonary Œdema.

Renal.—See Bright's Disease.

Œdematous Laryngitis. — See Part 9, Throat Diseases.

Œsophageal Cancer.—See Cancer of the Œsophagus.

Œsophageal Dilatation.—Gr. *οἴσειν* to carry + *φάγημα* food. A chronic affection, secondary to organic or spasmodic stricture of the cardia, or congenital or idiopathic (due possibly to atony) manifested by difficulty and distress in swallowing, discomfort in the sternal region due to the presence of food and the associated inflammation, and the regurgitation of undigested food and mucus containing no hydrochloric acid, pepsin, or rennin (see tests under Dyspepsia).

The diagnosis is made (except in early cases) by means of a bismuth X-ray examination (bismuth sulphate, ℥ss, suspended in mucilage of acacia), the passage of sounds, and œsophagoscopy.

Treatment.—Attend to the cause (see Cardiospasm; and Œsophageal Stenosis or Stricture). To allay inflammation, wash out the sac every night, and irrigate it with boric acid or borax solution, 2 per cent. (about a heaping tablespoonful to the quart), or silver nitrate, 1 : 1000. If blood is present (indicating ulceration), feed the patient per rectum for awhile, for fear of rupture (see Rectal Feeding).

Œsophageal Diverticula.—L. *diverticular'e*, to turn aside. The pouch usually occurs at the junction of the pharynx and œsopha-

gus, on the posterior wall, exactly opposite the cricoid, and is then due to muscular weakness at this point, plus food pressure. Sometimes traction diverticula occur, usually near the tracheal bifurcation, on the anterior wall, due to contracting cicatricial adhesions following tuberculous lymphadenitis. Rare causes of traction diverticula are disease of the pleura, lung, or pericardium, cricoid perichondritis, mediastinitis, vertebral caries, and thyroid adhesions. This variety of diverticulum is usually symptomless.

The condition usually occurs in elderly men, and is manifested by some difficulty in swallowing, the regurgitation of undigested food hours or days after it has been taken, a foul breath, the sensation of something in the throat, and sometimes the presence of a soft swelling in the lower part of the posterior triangle of the neck.

The œsophageal tube may stop in the diverticulum at a distance of 6 to 7 inches from the teeth (16 to 17 inches in the traction diverticulum). Take care to cause no perforation. Employ also œsophagoscopy and radiography, the latter immediately after filling the sac with a suspension of bismuth sulphate, ℥ss, in mucilage of acacia.

Treatment.—The sac may sometimes be emptied from the outside after each meal. It may be washed out every night with warm water, or if there is inflammation, with borax or boric acid solution, 2 to 3 per cent., or silver nitrate, 1 : 1000. A diverticulum tube (bent at its point at an acute angle) may be used.

Operate and remove the sac, if feasible. Make a long incision along the anterior border of the sternomastoid muscle with its centre opposite the cricoid cartilage. Carry the dissection down to the inner side of the great vessels, and outside the trachea, dividing the omohyoid muscle and the superior thyroid vessels. Remove the diverticulum, close the œsophageal wound carefully with silk, and insert a drainage tube (St. Clair Thomson).

Œsophageal Foreign Bodies.—See Part 9, Throat Diseases.

Inflammation.—See Œsophagitis.

Neuroses.—See Cardiospasm and Œsophagismus.

Obstruction.—See Œsophageal Stenosis or Stricture; and Foreign Bodies, in Part 9, Throat Diseases.

Paresis.—See under Cardiospasm.

Spasm.—See Cardiospasm and Œsophagismus.

Œsophageal Stenosis or Stricture.—Gr. *στένοσις*; L. *strictur'a*, narrowing. The diagnosis is made from the complaint of difficulty in swallowing, and by means of the stomach tube or œsophageal sound, the œsophagoscope, and the bismuth and acacia meal (bismuth sulphate, ℥ss, suspended in mucil. acaciæ) followed immediately by fluoroscopy. (See under Dyspepsia).

Etiology.—Congenital stenosis, very rare; spasm (see Cardiospasm and Œsophagismus); fibrous or cicatricial contraction due to wounds, foreign bodies, impacted food, burns, inflammation, corrosive poisons, syphilis, and infectious diseases; tumefactive œsophagitis; kinking or angulation just above the cardia; paresis, due to lesions in the pons and medulla, *e.g.*, hemorrhage, tumors, bulbar palsy, multiple sclerosis, tabes, dementia paralytica; paresis due to diphtherial or influenzal neuritis; compression due to goitre, aneurysm, tumors, retropharyngeal growths and swellings, cervical, bronchial, or mediastinal glands or abscesses, thymus tumors, exostoses, vertebral disease, pericardial and pleural effusion; œsophageal polyps; foreign bodies (*q.v.*, in Part 9, Throat Diseases); diverticula (*q.v.*); carcinoma (*q.v.*, constitutes 85 per cent. of cases of obstruction.—Osler).

Treatment of Cicatricial Stenosis.—Lubricate the œsophageal canal with warm oil, introduced by swallowing or by means of a Nélaton catheter and piston syringe. Then introduce with care, so as not to cause irritation or perforation, graduated flexible linen or gum-elastic or whalebone sounds with conical tips, beginning with the larger sizes, and passing to the smaller sizes until the stricture is entered. In passing the sound, have the patient seated on a low chair with the head well thrown back. Introduce the left index finger far into the pharynx, and pass the sound beside it until it impinges upon the posterior wall of the pharynx, then pass it along the pharynx, a little to one side of the middle line, into the œsophagus. There is normally often a slight obstruction in passing the cricoid cartilage.

Pass the largest sound possible (leaving it in ten minutes or longer) every other day until the stricture yields. Thereafter pass a large sound now and then to obviate a recurrence of the stricture. W. Hill employs the stomach tube, with the sealed lower end weighted with metallic mercury, and directs the patient to swallow when the tube approaches the stricture. The tube is left in situ for half an hour, if possible.

Thiosinamin or fibrolysin (Part 11) may

be administered hypodermically every two or three days for its alleged softening effect upon the stricture.

In cases due to corrosive poisons, one should begin to pass bougies about ten days (Sippy), four to six weeks (Gottstein), after the corrosive has been swallowed; and they should be passed in increasing sizes every three or four days until the largest size is passed. Sometimes they have to be continued every few weeks for years, or even throughout life.

To avoid a false passage, and in tight and tortuous strictures, Mixter suggests a silk thread as a guide. Sippy's technique is as follows: "About a yard of a 25-yard spool of braided surgical silk thread, No. 8, is placed in a capsule and swallowed, and gradually one or two yards more is swallowed each day. After a few days the thread which was first swallowed becomes deeply anchored in the intestine and later passes out through the rectum. The dilator (Fig. 55) consists of a series of graduated conical metal bulbs (A), which may be screwed on to a very flexible spiral introducer (B) about 22 inches long, made of piano wire, size No. 10. Each conical bulb is provided with a central canal that is continuous with the lumen of the spiral introducer when the bulb is adjusted. The end of the silk thread protruding from the mouth is drawn back from the œsophagus until it is moderately taut, and then threaded by means of a wire (C) through the centre of the bulb and spiral introducer. By holding the end of the thread firmly in one hand and pushing on the spiral introducer with the other, the very flexible spiral becomes rigid, and the conical bulb, guided by the thread, may be very gently forced through the stricture. Beginning with a bulb which passes with a very easy pressure, slightly larger bulbs should be used in succession until the stricture is sufficiently dilated. Usually an ordinary linen bougie may then be passed safely and the opening through the stricture maintained without the use of the thread" (B. W. Sippy). The pharynx may have to be first cocainized, (see Part 11) to prevent vomiting.

In very young children, and in adults unable to swallow the capsule, Sippy uses the œsophagoscope by which to pass a filiform whalebone bougie or one made of piano wire tipped with a small metal bulb, "to act as a guide over which dilating bulbs may be threaded," after the œsophagoscope has been withdrawn.

Another method of entering a small stricture is by the introduction of a large number of filiform bougies, as in urethral stricture. After the stricture has been dilated, an intubation tube, such as that of William Hill, or Symonds, may be worn continuously for a week or two.

The styletted tube is inserted through the œsophagoscope and fastened to the teeth. At first liquids are fed through the tube, but later food may be swallowed beside the tube owing to the continuous bougie effect on the stricture.

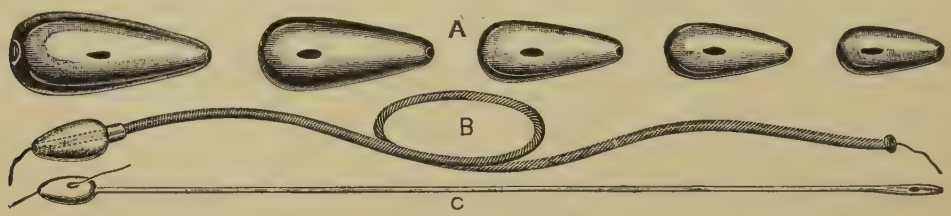


FIG. 55.—Œsophageal dilating bulbs A, introducer B, and threader C, described in the text. From *Musser and Kelly's Practical Treatment*, Courtesy W. B. Saunders Co.

Other measures which have been employed with success are (1) excision of the stricture; (2) internal œsophagotomy ("applicable only to very short, tight, annular strictures" William Hill); (3) œsophago-gastro-anastomosis in Sauerbruch's chamber; (4) dilatation of a stenosis of the cardia through a gastrostomy opening, by means of the finger or the rubber-covered blades of a pair of dressing forceps, followed by tubage; (5) cutting of the stricture with a fishing-line by sawing movements through the mouth or an opening in the neck and a gastrostomy opening, the stricture at the same time being made tense by means of a conical bougie, this internal œsophagotomy to be followed by the systematic passage of sounds. Gastrostomy is a palliative expedient. (See under Dyspepsia, for contra-indications to the passage of sounds.)

Remove polypi through the œsophagoscope; or, if the pedicle is long, induce vomiting by means of apomorphine, seize the extruded polyp with forceps, and remove it by means of ligature, galvano-cautery, or cold snare.

Œsophageal Ulcers.—See Œsophagitis, Chronic.

Œsophagismus.—See Cardiospasm and Œsophagismus.

Œsophagitis.—I. Acute Œsophagitis.—Symptomatology.—Difficulty and pain in swallowing; burning sensation; salivation; local tenderness; elevation of temperature; perhaps the regurgitation of food, mucus, and sometimes blood. Periœsophageal abscess and perforation may occur. If ulceration occurs, stenosis will follow.

Etiology.—Corrosive acids and alkalies; hot liquids; hard food; foreign bodies; infectious diseases (typhoid fever, pneumonia, scarlet fever, measles, diphtheria, smallpox, pyæmia, cholera); neighboring inflammation (stomatitis, thrush, pharyngitis, laryngitis, tracheitis, gastritis, mediastinitis); peptic ulcers near the cardia; continued bilious vomiting; uræmia.

Treatment.—For the treatment of corrosive poisoning, see Poisoning.

In acute catarrhal inflammation, recovery occurs in from three to fourteen days. Oil and milk may be given to drink, and perhaps a suspension of bismuth subcarbonate in mucilage of acacia or of tragacanth, gr. xxiv ad ℥i, one ounce twice or thrice daily. For thrush, give sodium bicarbonate, gr. xxx ad ℥i, one or two tablespoonfuls four to six times a day.

II. Chronic Œsophagitis.—Uneasiness in swallowing is the common complaint in chronic catarrh. The symptoms of ulcer are difficulty and pain in swallowing, regurgitation, vomiting, and hæmatemesis. Gastric ulcer and œsophageal varices are to be excluded.

Etiology.—*Causes of Catarrh.*—Acute œsophagitis; chronic alcoholism; tobacco addiction; chronic pharyngitis; chronic gastritis; chronic congestion due to heart or lung disease; thrush; œsophageal stenosis; diverticula.

Causes of Ulceration.—Acute œsophagitis; tuberculosis; syphilis; actinomycosis (all three extremely rare); cancer; stenosis; uræmia; acute infectious diseases; pressure of the cricoid in exhausting diseases (decubital ulcer); pressure of an aneurysm, tumor, thyroid, etc.; foreign body; peptic ulcer (extremely rare).

Treatment.—Attend to the cause. The diet should be that employed in cancer (*q.v.*); and pain and spasm may also be relieved as described in cancer.

℞ Bismuthi subcarbonatis..... gr. xxiv
Mucilaginis acaciæ vel tragacanthi ℥i
M. Sig.—Shake well and take one ounce (two tablespoonfuls) three or four times a day, in the recumbent posture.

℞ Argenti nitratis..... gr. i
Aquæ destillatæ..... ℥i
M. Sig.—One tablespoonful, swallowed in the recumbent posture, once every several days.

℞ Acidi tannici..... gr. v
Aquæ..... ℥i
M. Sig.—One or two tablespoonfuls, several times a day, swallowed in the recumbent posture.

A tube smeared with cacao butter and tannic acid, 10 per cent., or silver nitrate 5 per cent., may be passed daily, and allowed to remain in situ for ten minutes or longer; or the œsophagus may be irrigated with borax or boric acid solution, 3 per cent. Ulcers and fissures may be treated through the œsophagoscope with silver nitrate, gr. xx + ad ℥i. Rectal feeding (*q.v.*) or gastrostomy may be advisable in some cases in order to secure rest for the diseased organ.

Œsophagus, Affections of the.—See Œsophageal Affections.

Oidiomycosis.—Gr. *ᾠόν* egg + *μύκης* fungus. See Blastomycosis in Part 5.

Olfactory Affections.—L. *olfa'cere*, to smell. See Anosmia, Cacosmia, Hyperosmia, and Parosmia, in Part 8, Nose Diseases.

Oliguria.—See Anuria.

Omodynia.—Gr. *ὦμος* shoulder + *ὀδύνη* pain. See Myalgia.

Ophthalmoplegia.—Gr. *ὀφθαλμός* eye + *πληγή* stroke. See Motor Nerves of the Eyeball.

Opium Eating.—See Morphinism.

Poisoning.—See Poisoning.

Optic Nerve and Tract.—See in Part 6, Eye Diseases, the following captions, Amblyopia and Amaurosis without Ophthalmoscopic Change; Optic Chiasma, Tract, and Centres; Optic Atrophy; Optic Neuritis; and Retinitis.

Osteitis Deformans; Paget's Disease.—Gr. *ὀστέον* bone + *-ιτις* inflammation. A very rare chronic affection of the bones, occurring in adult life, characterized by a gradual hypertrophy and softening of the bones, often associated with pain, and resulting in enlargement of the cranium and clavicles, anterior and lateral bowing of the femora and tibiæ, and kyphosis, with consequent shortening of the stature.

Treatment.—The disease is incurable, but not fatal. Prescribe a tonic regimen: good food, fresh air, arsenic (Part 11). For the relief of pain, employ hot applications, the thermo-cautery, or other form of counter-irritation (see under Neuralgia.)

Osteo-Arthritis.—Gr. *ὀστέον* bone + *ἄρθρον* joint. See Arthritis Deformans, in Part 10, Orthopædics.

Osteo-Arthropathy, Pulmonary.—See the following:

Osteo-Arthropathy, Secondary Hypertrophic.—Gr. *ὀστέον* bone + *ἄρθρον* joint + *πάθος* disease; *ὑπέρ* over + *τροφή* nutrition. A symmetrical osseous hypertrophy and arthritis, involving usually the bones of the hands and feet (clubbing) and the lower ends of the bones of the forearms and legs, occurring as a result of chronic suppuration, chronic pulmonary, cardiac, and renal disease, congenital syphilis, chronic jaundice, chronic diarrhœa, and other chronic affections.

The condition may show improvement with improvement in the primary disease. Employ warm applications for the relief of pain.

Osteogenesis Imperfecta.—Gr. *ὀστέον* bone + *γεννάν* to beget. See Fragilitas Ossium.

Osteomalacia.—Gr. *ὀστέον* bone + *μαλακία* softening. A very rare chronic affection of the bones, occurring chiefly in relation to pregnancy, lactation, and menstruation, although men and children may have the disease, characterized by softening of the bones, which is preceded by aching pains in various parts (the extremities, dorsal and lumbar regions, and anterior portion of the pelvis), increased by motion, bone tenderness, muscular weakness, sometimes spasm or contracture, perhaps paræsthesiæ and other organic nervous phenomena, and resulting in difficult locomotion and bending or fracture of the bones. Occurring in pregnancy, the resulting pelvic narrowing necessitates the performance of Cæsarean section at term.

There are various endemic foci in Europe.

Treatment.—Enjoin absolute rest in bed, including feeding with a spoon and the use of the bed-pan and urinal, in order to avoid deformity or fractures. Use a water- or air-mattress, if possible, and guard carefully against bed-sores (*q.v.*). See that the bedroom is well ventilated; and prescribe an abundant diet, particularly the phosphorus foods, "milk, eggs, fresh meat, fish, beans, peas, and cereals." For the muscular pains and cramps, employ hot applications and massage.

℞ Phosphori..... gr. ⅒ (gr. ⅟₁₀₀ per dose)
Olei morrhuæ vel olei amygdalæ dulcis... ℥ix
M. Sig.—One dram t.i.d. (Gradually increase the dose to gr. ½ daily.)

℞ Olei phosphorati..... ℥i (gr. ⅒ ad ♏i)
Sig.—One minim, gradually increased to 3 to 4 minims, t.i.d.

℞ Pilulæ phosphori..... 20 pills (gr. ⅒ per pill)
Sig.—One pill, gradually increased to four pills t.i.d.

℞ Elixiris phosphori.... ℥ii (gr. ⅟₁₀₀ ad ℥i)
Sig.—♏xv, gradually increased to ℥i, t.i.d.

Continue the phosphorus for "at least one or two months." (Author ?)

Pituitary extract (anterior lobe, Burroughs and Welcome or Parke Davis: Part 11) should be tried. The anterior lobe of the hypophysis cerebri is related to the general growth of the body, especially the skeleton.

Suprarenal extract is recommended by Bossi: ♏viiss–xv of adrenalin, 1 : 1000 in one pint of normal saline solution (0.9 per cent.), subcutaneously, once daily for at least a month.

Calcium salts have not proved of value.

Should no improvement follow the above medication, remove the ovaries, and continue the medication. Oöphorectomy is credited with 80 per cent. of cures. A case of osteomalacia in the male treated by castration was not benefited, say Elliott and Nadler.

In pregnant cases, resort to Cæsarian section at term (see Part 4, Obstetrics), and at the same time remove the ovaries or the whole uterus. Nursing should not be permitted.

Osteomyelitis.—Gr. *ὀστέον* bone + *μυελός* marrow + *-ιτις* inflammation. Acute osteomyelitis is manifested by intense pain, increased by tapping the bone and by steady pressure on the bone even at a distance from the seat of pain, elevation of temperature, rapid pulse, leucocytosis, and prostration, soon followed by local swelling, and eventually fluctuation and sinus formation. The adjacent joint usually becomes swollen, even though it may not be infected.

Brodie's abscess is a chronic circumscribed abscess of cancellous tissue, without sequestrum formation, recognized by the X-ray as a translucent area surrounded by dense bone, whereas a chronic medullary abscess presents no characteristic X-ray picture. Brodie's abscess may persist for years and give rise to acute exacerbations of pain with tenderness, and perhaps some swelling, but little or no fever.

Bone tuberculosis usually begins in the epiphysis and spreads to the joint, rarely to the shaft (see Part 10, Orthopædics).

Etiology.—(a) Acute Osteomyelitis.—Early life; infectious diseases (measles, scarlet fever, typhoid fever, influenza, pneumonia, syphilis, tuberculosis, etc.); a focus of suppuration, either nearby or distant; traumatism; exposure to cold and wet; great fatigue. The usual infecting agent is the staphylococcus pyogenes aureus; rarely the staphylococcus albus, streptococcus, pneumococcus, or typhoid bacillus.

(b) Chronic Osteomyelitis.—Acute osteomyelitis; tuberculosis; glanders; actinomycosis; leprosy.

Treatment of Acute Suppurative Osteomyelitis.—Operate at once. Remove a button of cortical bone with a half-inch trephine, and enlarge the opening along the shaft for one or more inches with chisel and gouge, or a large burr attached to a dental engine. Remove all necrotic tissue, but do not curette. Spare the epiphyseal line as much as possible. Drain the abscess cavity with dry gauze.

If complete healing does not occur because of necrosis, which usually involves most if not all of the shaft, the necrotic sequestrum should be removed. If there is another bone to serve as a splint, as in the forearm and leg, the sequestrum should be removed about the eighth week after the evacuation of the acute abscess, before a dense, ossified periosteal involucrum has formed. The suppurating portion of bone is carefully removed from beneath the longitudinally incised periosteum, and the latter is then sutured with catgut so as to form a flattened tube (which eventually fills up with regenerated bone), the soft parts are sutured, and the limb put up in plaster. In five to eight months it may be used.

In chronic cases (old bone sinuses) in which the sequestrum has become completely separated, and may be felt to be loose with a probe, and the surrounding involucrum is dense, and incapable of central growth, the cavity resulting after the removal of the sequestrum is perhaps best obliterated by inverted skin flaps. Make a free, curved incision, and remove thoroughly all the diseased tissue, granulation tissue and sequestra, and all overhanging bony tissue, bevelling the edges of the bone. A large burr driven by a dental engine may be used to remove diseased bone, pressure being made from within out as in drilling out a tooth, and leaving a smooth even surface (F. G. Dyas). Employ the Carrel-Dakin treatment or dichloramine-T (see Wounds and Part 11), until the wound is sterile and the bone surface is covered with healthy granulations. Then fill in the defect with muscle, fascia, or periosteum. A lateral incision in the periosteum in the long axis of the bone may enable it to be drawn over to cover the raw bone surface.

Osteopathies, the Hypertrophic.—Gr. *ὀστέον* bone + *πάθος* disease; *ὑπέρ.* over + *τροφή* nutrition. Acromegaly; Leontiasis Ossea. Osteitis Deformans. Osteo-Arthropathy, Secondary Hypertrophic.

Osteopsathyrosis.—See Fragilitas Ossium.

Overstrain of the Heart.—See Heart-Strain.

Oxaluria.—L. *oxalas*, oxalate + *urina*, urine. See under Nephrolithiasis.

Oxycephaly; Tower or Steeple Head.—Gr. *ὀξύς* sharp + *κεφαλή* head. A deformity of the skull, either congenital or appearing in early life, and due probably to premature synostosis of the sagittal and coronal sutures. As the brain grows, symptoms of compression appear, *e.g.*, choked disc and subsequent optic atrophy, loss of smell, exophthalmos with divergent strabismus, perhaps headache.

Cushing's intermusculo-temporal decompressive craniotomy (unilateral or bilateral) should be performed early in order to preserve vision.

Oxyuriasis; Pin-Worm, Thread-Worm, or Seat-Worm Infection.—Gr. *ὀξύς* sharp + *οὐρά* tail; L. *vermicularis* worm-like, from *vermis*, worm. The pin-worm (oxyuris vermicularis) lives in the rectum and colon, and indeed as far up as the jejunum, and worm and eggs are discharged in the fæces, where the former may be seen as a minute white thread, one-sixth (male) to one-third (female) of an inch long.

a *b* *c*

Fig. 56.—Oxyuris vermicularis, a, natural size, and eggs, b and c, magnified 420 times. (From Pfaundler and Schlossmann).

The eggs thus discharged may contaminate the drinking water, vegetables, fruit, the fingers, towels, flies, etc.

The common symptoms of oxyuriasis are restlessness and irritability, insomnia, anorexia, anæmia, and itching at the nose and anus, worse at night when the worms migrate. In heavy infections, nausea, vomiting, abdominal pain, diarrhœa, tenesmus, headache, vertigo, convulsions, etc., may also occur.

Treatment.—Instruct the patient how to guard against auto-infection by means of absolute cleanliness of the food, drink, and person, including the bed-clothing. The nails should be cut and the fingers scrubbed with a brush; the anus and buttocks should be washed after each bowel movement; flies should be screened against and otherwise combated.

First expel the younger worms from the small intestine by means of active calomel followed by saline catharsis (see Part 11) for several days. Santonin is given by some with the calomel for several days, as in Ascariasis (*q.v.*); but Forchheimer, Kerley, and Potter declare that it is superfluous. Thymol, naphthalene tetrachloride, gr. ii–vi, according to age, four times a day for two or three days, betanaphthol, infusion of gentian, or of quassia, in large doses, and garlic are recommended. These vermicides should be preceded and followed by a purge. Garlic is very well recommended. (For all Drugs see Part 11).

After the small intestine has been cleared out, the colon and rectum must be cleared of adult worms by means of injections, of which the following are used:

1. Infusion of quassia: 1 to 2 oz. of quassia chips in 1½ pts. of water, boiled down to 1 pint, and strained (the best, says Croftan).
2. Vinegar: 2 tablespoonfuls to 1 quart of boiling water.
3. Benzine: 20 drops to 1 pint of warm water.
4. Perchloride of iron, 5 per cent.
5. Salt and water: 4 tablespoonfuls to the quart, cold.
6. Lime water.
7. Turpentine, ℥i to a pint of soapsuds.
8. Glycerine and water.
9. Infusion of garlic: 2 to 3 bulbs chopped up and boiled in 1 quart of water or milk and strained, one third used on successive days.

Before each injection, which should be given every evening for two weeks, or until all worms are expelled, the bowel should be cleansed of mucus with warm water containing borax, one to four teaspoonfuls to the pint. The injection should be retained as long as possible (five to thirty minutes), with the buttocks elevated or the patient in the knee-chest posture, and the anus closed. Six or eight ounces in an injection is sufficient.

For itching, smear one of the following into the anal canal: ung. mentholis, 5 per cent.; ung. hydrarg. dil.; ung. hydrag. chlorid. mitis, ℥ss–i ad ℥i; ung. carbolici, 3 per cent.; ung. gallæ et opii; ung. sulphuris, 5 per cent.; or insert an iodoform (gr. v) suppository.

Pachymeningitis.—Gr. παχύς thick + μῆνιγξ membrane + -ιτις inflammation. See Meningitis.

Paget's Disease of the Bones.—See Osteitis Deformans.

Nipple.—See under Breast Enlargements.

Pain (Chiefly from R. C. Cabot).—**1. Headache.**—See Headache.

2. Backache.—See Backache.

3. General Abdominal Pain.—CAUSES.—Intestinal colic (*q.v.*, for causes); constipation; diarrhœa; enteritis; appendicitis; typhoid fever; general peritonitis; tabes mesenterica, and tuberculous peritonitis; intestinal obstruction, including strangulated hernia; lead poisoning; gastro-enteric neuroses (see Gastralgia, and Enteralgia); malaria; Pott's disease; abdominal tumor; mucous colitis; extra-uterine pregnancy; parturition; aneurysm of the abdominal aorta; angioneurotic œdema; diaphragmatic pleurisy.

4. Epigastric Pain.—CAUSES.—Constipation; diarrhœa; enteritis; acute indigestion; appendicitis; gastric neuroses (see Gastralgia); lead poisoning; acute arsenical poisoning; pernicious anæmia; intestinal obstruction; tabes mesenterica and tuberculous peritonitis; gastro-hepatic congestion due to cirrhosis or cardiac disease; gastric ulcer; cholelithiasis; hyperchlorhydria; gastric cancer; pericarditis; pancreatitis; pancreatic tumors; pyloric adhesions; angina pectoris; hepatic gumma or other tumor; toxæmia of pregnancy with threatened eclampsia.

5. Right Hypochondriac Pain.—CAUSES.—Passive congestion of the liver; cholelithiasis; appendicitis with a high appendix; hepatic cancer; hepatic gumma; hepatic abscess; renal or ureteral stone; gastric or duodenal ulcer; subdiaphragmatic abscess; hydronephrosis; pyelonephritis; renal and perirenal infections; sacroiliac lesions; retroperitoneal tumors; pericarditis; gastritis; splanchnoptosis; movable kidney; local peritonitis; pleurisy; pneumonia; hysteria.

6. Left Hypochondriac Pain.—Causes.—Flatulence (angina pectoris, peptic ulcer, hyperchlorhydria, chronic appendicitis, cholelithiasis, toothache, etc.); renal disease (stone, tuberculosis, tumor, infection, hydronephrosis, cystic degeneration); perisplenic adhesions (leukæmia, splenic anæmia, malaria, syphilis, polycythæmia); cancer of the splenic flexure of the colon; pleurisy; pneumonia; peptic ulcer; debility of neurotic women.

7. Right Iliac Pain.—CAUSES.—Appendicitis; salpingitis; tubal adhesions; extra-uterine pregnancy; dysmenorrhœa; ovarian cyst with twisted pedicle or rupture; psychoneurosis, including fear of appendicitis; mucous colitis; ureteral stone; iliocæcal obstruction (tumor, tuberculosis, adhesions); inguinal hernia; local tuberculosis.

8. Left Iliac Pain.—CAUSES.—Salpingitis; tubal adhesions; extra-uterine pregnancy;

dysmenorrhœa; ovarian cyst with twisted pedicle or rupture; ureteral stone; cancer of the sigmoid; inguinal hernia; local tuberculosis; diverticulitis; vesical cancer; constipation; debility of neurotic women.

9. Axillary Pain.—CAUSES.—Flatulence; pleurisy; pneumonia; fractured rib; intercostal neuralgia; pleurodynia; spondylitis deformans; herpes zoster; costal tuberculosis; costal neoplasm; costal actinomycosis; angina pectoris; axillary abscess; cholelithiasis; pericarditis; renal infection; neurosis.

10. Pain in the Arms.—CAUSES.—Arthritis; subacromial or subdeltoid and subcoracoid bursitis; fatigue, and occupation-neurosis; osteomyelitis; aneurysm; neuralgia; mediastinal tumor; tumor of the arm or shoulder; cervical rib; angina pectoris; traumatism; lymphangitis; phlebitis; cellulitis; poliomyelitis; brain tumor, etc.; aortic incompetency.

11. Pain in the Legs and Feet.—CAUSES.—Infectious diseases; flat-foot; arthritis; varicose veins; tabes; arthritis deformans; phlebitis; sciatica; osteomyelitis; tuberculosis; myelitis; poliomyelitis; sprained ankle; syphilitic periostitis; tenosynovitis; neuritis; sarcoma; gout; Morton's metatarsalgia; intermittent claudication; nephrolithiasis; Pott's disease; psoas abscess; herpes zoster; infections; sacroiliac strain; erythromelalgia; hysteria.

Palmar Abscess.—L. *pal'ma*, palm. See Hand Infections.

Palpitation; Irritable Heart.—L. *palpitatio.* "Irregular or forcible action of the heart perceptible to the individual" (Osler). It is usually produced by extra-systoles (see Arrhythmia) without organic disease; and is usually of good prognosis.

Etiology.—Neurasthenia; hysteria; mental or physical overwork; emotional shock; masturbation; sexual excitement; menstruation; puberty; menopause; debility; anæmia; reflex and toxic influences—(nasal disorders, genital disorders, pregnancy, nephroptosis, hernia, abdominal plethora, constipation, gastric or intestinal indigestion, flatulence, intestinal parasites, hot bath, exophthalmic goitre, thyroid extract, apical tuberculosis, nephritis, supernormal blood pressure (*q.v.*), tea, coffee, tobacco, alcohol, digitalis, strophanthus, strychnine); valvular and myocardial heart disease; heart-block; convalescence from the acute fevers; comparatively slight exertion in high altitudes.

TREATMENT.—Attend to the cause. Reassure the patient, and enjoin correct hygiene, *e.g.*, adequate rest and moderate exercise, mental peace, regular hours of eating and sleeping, light diet, rest before and after eating, no heavy meals at night, regulation of the bowels, fresh air day and night, and a daily morning warm bath before breakfast, in a warm room, followed by a cool douche and brisk rubdown. Prohibit the use of tea, coffee, tobacco, and alcohol.

Osler recommends tincture of nux vomica in large doses as a tonic: ℥xx in water, t.i.d. Give iron if there is anæmia (for all drugs see Part 11).

For nervousness and sleeplessness, prescribe the bromides, or ammoniated tincture of valerian, t.i.d. For nocturnal palpitation, give the sedative on retiring.

For abdominal plethora, hemorrhoids, etc., prescribe sodium or magnesium sulphate, one tablespoonful dissolved in a little water, one hour before breakfast, together with colonic irrigation.

For the relief of the paroxysm itself, the following measures are recommended: (1) Loosen the clothing, if tight, and breathe deeply; (2) place smelling salts to the nose, or take a diffusible stimulant, *e.g.*, Hoffmann's anodyne, or a teaspoonful, well diluted, of equal parts of aromatic spirits of ammonia, compound spirits of lavender, spirits of chloroform, and syrup of ginger; (3) apply iodo-glycerine to the nose on a probe, or spray the nose with Dobell's solution; (4) place an ice-bag, belladonna or mustard plaster to the precordium; (5) paint the neck, along the course of the vagus nerve, with strong iodine; or stimulate the nerve with a faradic current; (6) give tr. aconiti, one drop every fifteen minutes for three or four doses.

Digitalis in moderate dosage is a reliable remedy for extra systoles. In full doses, however, it produces extra systoles.

In intractable neurotic cases the Weir Mitchell treatment is to be recommended. (see Neurasthenia).

Palsy.—See Paralysis.

Pancreas, Calculus of the.—Gr. πᾶς all + κρέας flesh; L. *cal'culus*, pebble. Pancreatic lithiasis is quite rare. The symptoms would suggest cholelithiasis, *e.g.*, pain in the neighborhood of the epigastrium, sometimes radiating to the back, and sometimes colicky, and then accompanied by vomiting, sometimes temporary jaundice during the passage of a stone through the diverticulum of Vater. Pancreatic stones, however, are revealed by the X-ray, (*q.v.*) whereas biliary stones are not; and should a stone be recovered from the fæces, it would be found to be opaque, white, and composed of calcium carbonate or phosphate without bile pigment, bile salts, or cholesterin.

In long standing cases, glycosuria may occur as a result of involvement of the

islands of Langerhans in a chronic interlobular pancreatitis. Abscess or cyst may occur.

Treatment.—An operation may, in certain instances, be considered.

Pancreas, Cancer of the.—See Cancer of the Pancreas.

Pancreas, Cysts of the.—Evacuation and drainage is usually the operation of choice. A fistula may result. Extirpation is rarely practicable; but it should be attempted if there is any evidence of malignancy, such as the presence of growths on the inner surface of the cyst. Consult surgical works.

Pancreas, Inflammation of the.—See Pancreatitis.

Stones in the.—See Pancreas, Calculus.

Pancreas, Tumors of the.—Varieties.—Cancer (*q.v.*), cysts (*q.v.*), and very rarely sarcoma, lymphoma, adenoma, etc. Removal of the growth is possible only when the head of the pancreas is not involved. In biliary obstruction, a cholecystenterostomy may be done.

Pancreatitis, Acute Hemorrhagic.—A rare affection, manifested by the sudden occurrence of violent epigastric pain, followed by vomiting and collapse, and in the course of twenty-four hours by a circumscribed epigastric swelling, due mostly to exudation within the lesser peritoneal cavity. Constipation is usually present, but sometimes diarrhœa occurs. There is slight elevation of temperature. If the patient does not die within two to five days, gangrene or suppuration ensues, and the epigastric swelling becomes marked. At operation the diagnosis is made by the discovery of opaque white foci of fat necrosis in the mesenteric and subperitoneal fat. Recovery is rare.

Etiology.—Lodgment of a gall-stone or pancreatic stone in the diverticulum of Vater, with resulting entrance of bile into the pancreatic duct; traumatism; pregnancy; alcohol; syphilis; typhoid fever; influenza, mumps; gout; vascular disease; glycosuria; extension of inflammation from a gastric or duodenal ulcer; unknown causes.

Treatment.—Operate at once. Open the abdomen above the umbilicus through the middle of the rectus, and expose the pancreas either through the gastro-colic omentum or gastrohepatic ligament, depending upon the height of the stomach. Make multiple incisions into the pancreas, and drain freely, by means of large drainage tubes, through a posterior stab-wound in the left costovertebral angle, or through the anterior wound, or both. Explore the gall-bladder, ducts, and diverticulum of Vater for stones, and drain the ducts and gall-bladder; if necessary (see Cholelithiasis).

If marked intestinal paralysis is present, drain the intestines by means of an enterostomy, perhaps a typhlostomy opening and administer pituitrin (Part 11). Enteroclysis and hypodermoclysis should be resorted to. To obviate digestion of the operative wound, smear with an antiseptic ointment, and employ copious dressings saturated with a solution of 1 per cent. HCl, which destroys the alkalinity of the escaping pancreatic fluid and inhibits the action of the enzymes. (J. B. Murphy.)

Pancreatitis, Chronic.—The condition is either an interlobular or an interacinar sclerosis. The former follows chronic catarrh of the pancreatic duct, due to gastro-duodenal catarrh, gastric or duodenal ulcer, or a gall-stone or pancreatic stone in the ampulla of Vater. It also accompanies hæmochromatosis (*q.v.*). The interacinar form may be due to infection through the duct, but is more commonly associated, says Osler, with cirrhosis of the liver and arteriosclerosis. Alcohol and syphilis are important etiological factors.

The symptoms may be dyspeptic or cholelithic. Diabetes occurs when the islands of Langerhans become involved. Progressive wasting occurs.

Pancreatic insufficiency is indicated by the presence in the stools of fat and bits of striped muscle or of thymus or other tissue rich in nuclei, following their ingestion, and by a deficiency in the three pancreatic ferments as ascertained by testing the duodenal contents (using the duodenal tube (*q.v.*) in the addendum to Ankylostomiasis).

Treatment.—Correct the cause. In cholelithic cases, taken early, " a perfect recovery may be expected in the very great majority of cases," says Moynihan. Prolonged drainage (at least six weeks) from the gall-bladder or ducts is essential.

The dietary best suited for cases of deficient pancreatic secretion is as follows: minced meat (digested largely in the stomach), skimmed milk, curds, gelatin, dry toast, rusk, biscuit or cornflakes (requiring thorough mastication and insalivation), sugars as tolerated; no fats or eggs. Taka-diastase may be given before meals for the digestion of carbohydrates, and pancreatin after meals or with meals for the digestion of proteids. Oxgall or sodium glycocholate is also recommended. (See Drugs, Part 11).

℞ Fellis bovis purificati..... 3i (gr. iiss per pill)
Extracti glycyrrhizæ, q.s.
M. et fiant pilulæ No. 24.
Sig.—Two to six pills after meals. (Forchheimer.)

For excessive intestinal putrefaction, due to pancreatic insufficiency, one may prescribe the intestinal antiseptics, calomel, beta-naphthol, naphthalene tetrachloride, or boric acid

Urotropin and aspirin are excreted through the pancreatic ducts, where they exert a disinfectant action.

Cholecystostomy with prolonged drainage, however, should not be postponed.

Pancreatitis, Suppurative.—The symptoms may be of sudden or gradual onset, depending upon the cause. Usually there occur vomiting, fever, sometimes chills, diarrhœa or constipation, and a tender, deep-seated epigastric mass. Peritonitis commonly occurs, either from extension of the inflammation or from rupture of the abscess. In cases with gradual onset there are usually vague gastro-intestinal symptoms and epigastric tenderness.

Treatment.—This is, of course, surgical. The abscess should be freely incised and drained, as described under Pancreatitis, Acute Hemorrhagic.

Pappataci Fever.—See Phlebotomous Fever.

Paræsthesia of the Extremities.—See Acroparæsthesia.

Paralysis.—Gr. παρά beside + λύειν to loosen. See the following captions: Amaurotic Family Idiocy; Amyotonia Congenita; Aphasia; Aphonia; Apoplexy; Arsenic Poisoning; Astasia-Abasia; Ataxia; Ataxia, Friedreich's Hereditary; Ataxia, Locomotor; Atrophies, the Progressive Muscular; Beriberi; Brain Localization; Brain Abscess; Brain Tumor; Bulbar Paralysis; Caisson Disease; Chorea, Tetanoid; Claudication, Intermittent; Combined System Diseases; Dementia Paralytica; Diphtheria; Dystrophy, Progressive Muscular; Encephalitis, Acute; Facial Hemiatrophy; Facial Paralysis; Family Periodic Paralysis; Gait; Hæmatomyelia and Hæmatorrhachis; Hysteria; Interstitial Hypertrophic Progressive Neuritis of Childhood; Kubisagari; Landry's Acute Ascending Paralysis; Lead Poisoning; Leprosy; Malaria, Pernicious; Meningitis; Migraine; Multiple Sclerosis; Myasthenia Gravis; Myelitis; Nerves, Peripheral; Neuralgia; Neuritis, Localized; Neuritis, Multiple; Paralysis Agitans; Paraplegia; Pellagra; Periodical Paralysis; Poliomyelitis, Acute; Spastic Paralysis; Spina Bifida; Spinal Cord Localization; Spinal Roots, Sunstroke; Syphilis; Syringomyelia; Typhoid Spine; Uræmia.

Paralysis Agitans; Shaking Palsy; Parkinson's Disease.—A not uncommon chronic affection of the nervous system, occurring nearly always after the age of forty, and characterized by tremor (pill-rolling tremor, which usually ceases during voluntary movements; sometimes absent), muscular weakness, and muscular rigidity or stiffness, resulting in difficulty and slowness in initiating and executing voluntary movements, resistance to passive movements, a "statuesque" bending of the upper part of the body, usually forward, with the arms held away from the body and flexed at the elbows, an immobile mask-like face with the eyebrows elevated, and a peculiar gait, which, after the initial difficulty in commencing is overcome, is rapid with a tendency to fall, as though the patient were "running after his centre of gravity" (festination or propulsion, sometimes lateropulsion or retropulsion). According to J. Ramsay Hunt, the disease is due to atrophy of the efferent or motor extrapyramidal or pallidal system of the corpus striatum, the function of which is to control automatic and associated movement.

No cure can be expected. Remissions and stationary periods sometimes occur, but the tendency is slowly downward.

Etiology.—Heredity; emotion; shock; worry; traumatism; overexertion; exposure to cold and wet; infectious diseases. See Tremor, for all its causes.

TREATMENT.—Enjoin a quiet life, and active and passive exercises carried out for several minutes at a time several times a day, for the purpose of lessening the muscular rigidity. Vibratory and manual massage and a daily warm bath are also useful to this end. Fowler's solution of arsenic (Part 11) may be given intermittently as a tonic. Parathyroid extract, gr. $\frac{1}{20}$ to $\frac{1}{10}$ to $\frac{1}{6}$, t.i.d., is well recommended. For annoying tremor the following drugs are employed:

Hyoscine hydrobromide, gr. $\frac{1}{200}$, every six hours, gradually increased in frequency until the tremor is lessened, or dryness of the mouth and dilatation of the pupil occur. It may be increased to gr. $\frac{1}{100}$ to $\frac{1}{60}$, two to three times a day. The drug may be continued in safe dosage "for years." (Starr.)

Codeine, gr. $\frac{1}{6}$, no more than three doses daily, aids the action of hyoscine. (Starr.)

Tr. gelsemii, gtt. v, in water, three or four times a day.

Tr. veratri viridis, gtt. ii–iii, in water, t.i.d. (Oppenheim combines the latter two drugs.)

For the treatment of insomnia, consult Insomnia.

Paramyoclonus Multiplex; Myoclonus.—Gr. παρά beside + μῦς muscle + κλόνος disturbance; L. *mult'iplex*, manifold. An uncommon chronic nervous affection, char-

acterized by constant or paroxysmal, general, usually bilateral and symmetrical, abrupt clonic, "lightning-like" or "shock-like" muscular contractions, usually aggravated or excited by emotion and mechanical irritation of the skin, muscles, or tendons, including exposure to cold. It sometimes occurs with epilepsy; and it may be a manifestation of hysteria.

Exclude acute chorea, Huntington's chorea, and convulsive tic.

The Prognosis is unfavorable, except in hysterical myoclonus.

TREATMENT.—Enjoin good hygiene, adequate rest and exercise, fresh air day and night, warm clothing, regular hours of eating and sleeping, a daily morning warm bath in a warm room followed by a cool spinal douche, care of the bowels and kidneys, an abundance of wholesome food, and Fowler's solution of arsenica as a tonic. Starr, who gives a favorable prognosis, employs "strong galvanic currents to the spine and neck, and the application of the anode to sensitive points in case these exist," together with chloral and arsenic. The bromides and valerian may be of service. (See Drugs, Part 11).

Paraplegia.—Gr. παρά across + πληγή stroke. Paraplegia denotes paralysis only of the legs and lower part of the body.

Causes and Varieties.—Ataxic paraplegia (see Ataxia); spastic cerebral paraplegia of infants, or Little's disease (see Spastic Paralysis); myelitis; hereditary and familial spastic paraplegia (see Spastic Paralysis); primary combined sclerosis; spinal hemorrhagic pachymeningitis, or hæmatoma of the dura mater; hæmatomyelia and hæmatorrhachis; cerebral arteriosclerosis; sacral plexus disease due to tumors, inflammation, or lumbosacral disarticulation; multiple neuritis; aneurysm of the abdominal aorta; diabetes; anæmia; lathyrism (vetch or chick-pea poisoning); influenza; hysteria. (See also Spastic Paralysis; Brain Localization; and Spinal Cord Localization.)

Parasitic Stomatitis.—See under Stomatitis.

Paratyphoid Fever.—Gr. παρά near. An acute infectious disease, caused by the bacillus paratyphosus (two types, "A" and "B"), and scarcely to be distinguished, clinically, from typhoid fever. The onset is usually sudden, with vomiting, chill, diarrhœa, and fever, and herpes appears early; but the onset is also often gradual. The disease usually runs a somewhat milder course than typhoid fever, and is rarely fatal; but in some instances the symptoms may be the same in every particular as those of typhoid fever, even as to types, complications, and severity. The incubation period is from three to fifteen days. The paratyphoid bacillus sometimes sets up a severe gastro-enteritis (so-called "infectious meat poisoning" or "ptomaine poisoning"). The paratyphoid fevers are transmitted in the same ways as typhoid fever, and, in addition, through the medium of infected meat, sausages, etc.

The agglutination may be greater in a paratyphoid case to the typhoid bacillus than to the paratyphoid bacillus, and vice versa; but the paratyphoid bacillus is agglutinated more quickly by a paratyphoid serum than is the typhoid bacillus by the typhoid serum. A positive serum agglutination in the non-vaccinated means one or more of the three typhoid fevers is present, but it does not indicate which one. The serum test is useless in those who have been vaccinated. A differential diagnosis can be made only by an early blood culture. The H. K. Mulford Co., Philadelphia, furnish agglutinating sera for the identification of the three types of bacillus. For Prophylaxis and Treatment, see Typhoid Fever.

Paresis, General, of the Insane.—See Dementia Paralytica.

Paresthesia of the Extremities.—See Acroparæsthesia.

Parkinson's Disease.—See Paralysis Agitans.

Parosmia.—See Part 8, Nose Diseases.

Parotitis.—Gr. παρά near + οῦς ear + -ιτις inflammation. **I. Acute Parotitis.**—CAUSES.—Mumps (*q.v.*); infectious diseases (typhoid fever, typhus fever, scarlet fever, measles, smallpox, cerebrospinal fever, dysentery, yellow fever, Asiatic cholera, pneumonia, secondary syphilis, pyæmia); dry infected mouth; injury or disease of the abdominal or pelvic viscera; facial paralysis; chronic metallic poisoning; diabetes.

Treatment.—Apply an ice-bag, or hot water bag, or leeches, or mercury ointment. Keep the mouth and teeth clean by means of castile soap, a soft brush or sponge, and warm water, followed by Dobell's solution (Part 11). Should signs of suppuration appear, make one or several free incisions, parallel to the branches of the facial nerve.

II. Chronic Parotitis.—CAUSES.—Acute parotitis; inflammation of the throat; secondary syphilis; tuberculosis (extremely rare); chronic nephritis; gout; lead; mercury; bismuth; potassium iodide; stricture of the salivary duct; foreign body or calculus

(usual cause) in the salivary duct; unknown causes. (See also Mikulicz's Disease.)

Treatment.—Attend to the cause. Explore Steno's duct with a filiform bougie or a very fine silver probe. Remove foreign bodies or stone; dilate strictures. Prescribe a buccal antiseptic, such as Dobell's solution. Apply iodine-petrogen or iodex to the gland itself. Arsenic may be tried. (For drugs, see Part 11.)

Parotitis Epidemica.—See Mumps.

Paroxysmal Albuminuria.—See Albuminuria.

Hæmoglobinuria.—See Hæmoglobinuria.

Tachycardia.—See Tachycardia.

Pavor Nocturnus.—L. Night Terrors, (*q.v.*)

Peliosis Rheumatica.—Gr. πελιός livid. (See Purpura, in Part 5, Skin Diseases.)

Pellagra.—L. *pel'lis*, skin + Gr. ἄγρα seizure. An endemic, chronic, remittent disease of unknown etiology, characterized by the following combination of symptoms: chronic alimentary catarrh; a recurrent erythema, which appears usually upon parts exposed to the sun (back of the hands, lower forearms, face, neck, and dorsal aspect of the feet), followed by desquamation and pigmentation; nervous disturbances due to combined sclerosis of the cord (see Combined System Diseases); and insanity.

The disease may be infectious, or due to diseased maize, or to a lack of certain "vitamines" in the diet, or to the presence in the drinking water of silica in colloidal solution, or to the "presence in vegetable foods of excessive amounts of soluble aluminum salts," or to biologically deficient protein (corn lacks the vitally essential amino acids, lysin and tryptophan).

Prognosis.—In non-alcoholic cases under fifty years of age, taken early, and well treated, a cure may usually be effected; but prolonged treatment is required, and the physician and patient should not be discouraged by relapses. The organic nervous changes are apt to be permanent. Patients who have had repeated severe attacks die in from five to ten to fifteen years.

Treatment.—Enjoin a strict hygienic regimen: adequate rest and exercise, cheerfulness, fresh air day and night, regular hours of eating and sleeping, a daily morning bath in a warm room followed by a cold spinal douche, and a simple but abundant, nutritious mixed diet containing plenty of fresh meat, fresh milk, buttermilk, fresh eggs, and fresh or dried, but not canned legumes; no alcohol; no cornmeal products; "salt should be given freely," says Osler. Prescribe such tonics as iron, strychnine, and particularly arsenic in full doses, and quinine (see Part 11). Salvarsan may be tried. The patient should keep out of the sun and heat. He is best removed permanently to a cold climate.

For the skin lesions, employ mild ointments such as those of zinc oxide and boric acid, or calamine lotion (see Part 11).

For neuralgic pains, prescribe the remedies recommended under Neuralgia.

For diarrhœa, employ bismuth in large doses, etc. (see Diarrhœa).

For sore mouth, prescribe Dobell's solution, and occasional painting with silver nitrate, gr. xx ad ℥i.

For giddiness is recommended tincture cocculus orientalis, 10 to 15 drops in water daily.

For nervous symptoms prescribe the bromides.

Pentosuria.—Pentose + Gr. οὖρον urine The very rare, harmless occurrence of the sugar, pentose ($C_5H_{10}O_5$), in the urine, derived from the carbohydrate fraction in the nuclei of the cells.

Peptic Ulcer.—Gr. πέψις digestion + L. *ulcus.* See Gastric and Duodenal Ulcer.

Perforating Ulcer.—See Ulcer, Cutaneous.

Pericardial Effusion.—See Pericarditis.

Pericarditis.—Gr. περί around + καρδία heart + -ιτις inflammation. At the onset, pericarditis is manifested by pain, which is precordial, or referred to the epigastrium, shoulder, or left scapular region, sometimes anginal in character; there is slight elevation of temperature, rapid pulse, dyspnœa, perhaps cough, perhaps delirium, and a to-and-fro friction sound may be heard associated with the movements of the heart. With the development of effusion, the friction sounds disappear, the area of cardiac dulness increases, and the heart-sounds and impulse diminish, just as in dilatation of the heart (which, indeed, is apt also to be present), and the dyspnœa increases.

Myocarditis and endocarditis are usually associated with the pericardial inflammation; in other words, the condition is usually a carditis.

Adherent pericardium is a possible sequel.

Etiology.—Rheumatic fever (the cause in nearly all cases); chorea; tonsillitis; infectious diseases (scarlet fever, pneumonia, measles, cerebrospinal fever, smallpox, acute miliary tuberculosis, septico-pyæmia, gonorrhœa, tuberculosis, syphilis); neighboring pleuritis; traumatism; gout; chronic nephritis; diabetes; arteriosclerosis; cancer; scurvy; leukæmia. It occurs in chronic wasting diseases usually as a terminal event.

TREATMENT.—Absolute rest in bed, in a semi-recumbent posture, including the use of the bed-pan and urinal and feeding by the nurse, is imperative. Visitors should be excluded. The bowels should be kept active by means of mild laxatives, such as rhubarb, cascara, and compound licorice powder (see Part 11). The diet should be moderate and bland, and, in the acute stage, liquid; meat and meat extracts are taboo. The ice-bag, suspended from a bed-cradle, should be applied over a layer of flannel more or less continuously. Cupping (*q.v.*), or the application of about six leeches, may be of service in robust subjects. The Paquelin cautery and mustard poultices are also recommended. In children, warm flaxseed poultices are usually better tolerated than cold.

If these measures do not suffice to relieve pain, dyspnœa, and restlessness, prescribe morphine for adults, paregoric or codeine for children.

For a weak and rapid pulse, administer caffeine, sodium salicylate, strychnine, atropine, strophanthus, or alcohol (see Part 11).

In the presence of rheumatic fever, some do and some do not stop the salicylates on the appearance of pericarditis, because of the depressant action upon the heart. Some give, instead of the salicylates, alkalies (sod. bicarb.), and perhaps quinine, gr. v–xv, in divided doses, in capsule.

Should effusion occur, restrict the fluid intake, allow no salt, and promote mild saline, purgation and diuresis, the latter by means of diuretin, theocin, or potassium acetate or citrate. Repeated small blisters (see Cantharides in Part 11) are also recommended, excepting in children; also mustard poultices (*q.v.*), leeches, and Bier's suction cups.

If the fluid accumulation becomes so large as to cause dyspnœa, cyanosis, and a small, rapid pulse, perform paracentesis under local anæsthesia. Introduce the aspirating needle in the fourth or fifth interspace, about one inch to the left of the sternum, to avoid the internal mammary artery; or insert it to the left of the nipple, between the apex beat and the outer line of absolute dulness; or if the effusion is large, the needle may be inserted upward and backward close to the costal margin in the left costo-xiphoid angle. After aspirating, seal the puncture with a thin wisp of sterile cotton saturated with collodion.

If the effusion is purulent, free drainage should be established; and to this end portions of the costal cartilages should be removed, if need be.

Billings highly praises the hypodermic administration of sodium cacodylate in rheumatic pericarditis; for adults, gr. v, one to four times daily, for a week, if necessary; for children, gr. i, every six hours.

Antitoxic sera and vaccines (see Part 11) may be used when the infecting agent is known.

In tuberculous pericarditis, the injection of naphthol-camphor (*q.v.*) into the pericardial cavity, after tapping, has resulted in cure.

During convalescence prescribe iron if needed; and also potassium iodide, gr. iii, well diluted, t.i.d., for resorptive purposes (see Part 11).

(See Hydropericardium, and Hæmopericardium.)

Pericardium, Adherent.—This is a sequel of pericarditis. In adhesion of the peri- and epicardial layers alone, there may be no symptoms; but in involvement of the mediastinum and peritoneum (chronic fibrous mediastino-pericarditis and polyserositis) the heart becomes markedly hypertrophied and there is marked ascites, suggestive of hepatic cirrhosis. Acute cardiac dilatation is apt to supervene.

The physical signs, taken singly, are not pathognomonic. They are: a prominent precordium; absence of the apex impulse; diastolic shock; no alteration in the area of precordial dulness on turning the patient on his side; systolic retraction of the lower intercostal spaces in the left axilla and left back, followed by a diastolic rebound; diminished respiratory movements of the epigastrium and lower left chest, due to immobility of the diaphragm; sudden diastolic collapse of the veins of the neck.

Treatment.—The diet should be poor in salt. Alcohol and tobacco should be interdicted. Heart tonics should be prescribed as required (see Cardiac Insufficiency). The only remedial treatment possible is the removal of the precordial osteo-cartilaginous wall (Brauer's operation). A curved flap of skin is turned up, and three or four inches of the third, fourth, and fifth left costal cartilages and ribs are removed, taking care not to damage the pleura.

Pericolitis.—Gr. περί around + κῶλον colon. See Peritonitis, Circumscribed, Acute or Chronic, and Diverticulitis.

Perihepatitis.—Gr. περί around + ἧπαρ liver. (See Peritonitis.)

Perinephric Abscess.—See Part 3, Genito-Urinary Diseases.

Periodic Headache.—See Migraine.

Paralysis.—See Family Periodic Paralysis.

Periodontitis.—Gr. περί around + ὀδούς tooth + -ιτις inflammation. (See Pyorrhœa Alveolaris).

Periostitis.—Gr. περί around + ὀστέον bone + -ιτις inflammation. I. Acute.—The symptoms and treatment of acute suppurative periostitis are the same as those of acute osteomyelitis. Incise the abscess, remove any necrotic bone, and pack lightly with gauze.

II. Chronic Periostitis is characterized by thickening, with or without pain. The causes are traumatism, inflammation, or irritation in the adjacent bone or soft parts, syphilis, and long-continued suppuration in some part of the body (toxic osteoperiostitis ossificans; pulmonary hypertrophic osteoarthropathy).

Peripheral Nerves.—See Nerves, Peripheral.

Neuritis.—See Neuritis, Multiple.

Periproctitis.—Gr. περί around + πρωκτὸς anus. (See Peritonitis.)

Perisigmoiditis.—Gr. περί around + σιγμοειδής like the letter sigma, Σ or S. (See Peritonitis.)

Perisplenitis.—Gr. περί around + σπλὴν spleen. (See Peritonitis.)

Peristaltic Unrest.—Gr. περί around + στα'λσις contraction. See Dyspepsia, Nervous.

Peritonitis, Acute Circumscribed.—Gr. περιτόναιον : περί around + τείνειν to stretch; -ιτις inflammation. Acute circumscribed peritonitis is the result of trauma, or of extension of inflammation from an abdominal, pelvic, or thoracic viscus. Localized residual abscesses may follow diffuse peritonitis.

The symptoms are local pain, tenderness, and muscle spasm, elevation of temperature, perhaps the presence of a mass, and perhaps other indications of the organ primarily affected.

The formation of adhesions may later give rise to gastro-intestinal trouble.

The Treatment is surgical. The ventral decubitus after operation is strongly advocated by the Mayos.

Subphrenic or subdiaphragmatic peritonitis or abscess deserves special consideration (see Subdiaphragmatic Abscess).

Peritonitis, Acute Diffuse.—Symptomatology.—In perforative cases the onset is sudden, with sharp pain, vomiting, shock, abdominal rigidity, and diffuse tenderness. The patient may revive, but symptoms of diffuse peritonitis soon supervene, viz., tympanitic distension, general rigidity, pain, and tenderness, flexion of the thighs, vomiting, constant thirst, small rapid pulse, some elevation of temperature, usually constipation, but often diarrhœa, a pinched, anxious expression, and usually death. In non-perforative cases the onset may be gradual.

Etiology.—(a) Primary or hæmatogenous peritonitis, occurring in septico-pyæmia, pneumococcus and other infections, exposure to cold, and as a terminal event in chronic nephritis, gout, arteriosclerosis, hepatic cirrhosis, pulmonary tuberculosis, cancer, etc.

(b) Secondary peritonitis, occurring as a result of inflammation, but especially perforation, of an abdominal or pelvic viscus; or abscess, etc., *e.g.*, gastric or duodenal ulcer, or jejunal ulcer following gastro-jejunostomy; cancer; appendicitis; salpingitis; ovaritis; metritis; acute phlegmonous gastritis; acute corrosive gastritis; acute enteritis; intestinal ulceration (*q.v.*, under Enteritis); intestinal obstruction; intestinal infarction; traumatism; cholecystitis; suppurating hydatid or ovarian cyst; acute pancreatitis ; tuberculosis ; hepatic abscess ; splenic abscess; nephric abscess; retroperitoneal abscess; abscess of a mesenteric lymphatic gland; empyema; Pott's disease; perforating ulcer of the urinary bladder; phlebitis of the umbilical vein in infants; operative contamination; perforation of organs by sounds.

The usual infecting organisms are the colon bacillus, streptococcus, staphylococcus, and gonococcus; rarely the pneumococcus, bacillus pyocyaneous, bacillus lactis aërogenes, Friedländer's bacillus, and proteus vulgaris.

Treatment.—In view of the high mortality following the operative treatment of diffuse peritonitis, it seems wise (except in perforation of the stomach or bowel, or ileus, or torsion of an ovarian cyst, but not excepting perforative appendicitis seen late, peritonitis secondary to pyosalpinx, and pneumococcus peritonitis—Jopson) to employ the Ochsner plan, in the hope that the inflammation may become localized, and an operation then rendered more useful. The Ochsner plan is summarized as follows: absolute quiet in a semi-sitting posture (to lessen absorption through the diaphragm); no food or fluids by mouth, the latter to be kept clean and moist; for vomiting—gastric lavage, morphine hypodermically, or some one of the remedies enumerated under Vomiting; constant proctoclysis, with the reservoir elevated only about 6 or 7 inches above the buttocks, no tube-clamps used, and the saline solution (℥i ad Oi) kept warm

(115° F.) by means of glass hot-water bottles immersed in the metal reservoir, a flow of 1½ pints an hour to be maintained (see Appendicitis); for tympanites, hot turpentine stupes (Part 11), and a long colon tube for half an hour every three hours; for pain—the ice-bag, hot-water bag, large warm poultices, or 50 per cent. alcohol compresses changed every twelve hours, and morphine, if necessary; for hiccough—atropine (Part 11) or morphine; and finally, nutritive enemata (see Rectal Feeding).

For a rapid, weak pulse, inject caffeine sodio-salicylate, or camphor, or ether, or digitalin, or adrenalin. Pituitrin is valuable in combating shock and intestinal paralysis. (For drugs and sera see Part 11).

Serum treatment may be tried. Good results are reported from the use of polyvalent anticolon serum, but not from the polyvalent antistreptococcus serum.

In the absence of ileus or of perforation of the stomach or bowel, saline catharsis might be of great value, but it is usually condemned.

Where surgical interference is indicated, as in gastric or intestinal perforation, ileus, and torsion of an ovarian cyst, operate just as soon as, by means of warmth, bandaging of the limbs, and stimulation with strychnine, the patient reacts from the shock. During the operation, keep the blood-pressure up by means of submammary saline (0.9 per cent.) infusion, or, better, gum-salt solution (Part 11). As a rule, dry local sponging is considered safer than irrigation, except perhaps in streptococcus infection, in which thorough irrigation is recommended. All clots and food particles should be carefully removed. In sponging, do only what is deemed necessary, and avoid irritating the peritoneum. Introduce glass drainage tubes, filled with gauze, through the operative wound into the pelvis, or through a second incision above the pubis. Then place the patient in the Fowler semi-sitting posture, and employ Murphy's constant proctoclysis, etc., for several days, allowing no food or water by mouth, and washing out the stomach as often as necessary to prevent vomiting. The normal saline should be stopped if the pulse becomes full and signs of œdema of the lower portion of the lungs appear. The ventral decubitis is strongly advocated by the Mayos. The gauze drains should be changed every five or six hours.

The following complications and sequelæ must be borne in mind: "secondary abscesses, near or remote, in the abdominal cavity, lymphatic infections in the mesenteric and retroperitoneal chains, subphrenic and pleural infections, embolic abscesses of the liver, lungs, heart, etc., nephritis, phlebitis of the extremities, twists and strangulations, fecal fistulæ, perforations of an abscess into various organs, parietal cellulitis, cutaneous eruptions, acute pulmonary œdema, parotiditis, the awakening of latent systemic infections, as malaria, rheumatism, tuberculosis, etc., etc." (Munro.)

Peritonitis, Acute Localized.—See Peritonitis, Acute Circumscribed.

Peritonitis, Simple Chronic (Non-Tuberculous, and Non-Malignant).—There is a localized form and a diffuse form. The localized form is associated with dense progressive adhesion formation, from which the following possible consequences may occur, viz., dyspepsia and persistent pain after eating; jaundice due to constriction of the common bile duct; duodenal or pyloric stenosis (local thickening may even suggest cancer); constipation and pain, and sometimes local pericolonic thickening; hour-glass contraction of the stomach; acute intestinal obstruction due to kinking and strangulation of the gut.

I. Causes of Chronic Localized Peritonitis.—Pelvic inflammatory disease; chronic appendicitis; chronic intussusception; chronic gastric or duodenal ulcer; chronic cholecystitis; chronic fecal accumulation in the flexures of the colon; pressure of a tight corset or belt; hernia.

In chronic diffuse peritonitis, the peritoneum is thickened and contracted, with resulting retraction of the mesentery and omentum; it may be nodular in places, adhesions are commonly present, and also ascites, which necessitates repeated tapping. The disease is usually fatal in from two to sixteen years, although repeated tapping has resulted in cure.

II. Causes of Chronic Diffuse Peritonitis.—Polyserositis (chronic pericarditis, pleuritis, and mediastinitis: see Pericardium, Adherent); arteriosclerosis; arteriosclerotic kidney; hepatic cirrhosis; syphilitic hepatitis; chronic cholecystitis; chronic gastric or duodenal ulcer; chronic passive congestion; chronic alcoholism; traumatism; repeated tapping in ascites; unknown causes.

Treatment of Simple Chronic Peritonitis.—Consider the cause. In the diffuse form, resort to paracentesis abdominis (see Ascites) as often as required.

Peritonitis, Tuberculous.—Three forms are recognized: (1) miliary tuberculous peritonitis with general ascites; (2) ulcerative peritonitis with resulting serofibrinous

or purulent exudation, localized by adhesions and giving rise to loculated or encysted or sacculated ascites; (3) obliterative, adhesive, or chronic fibroid peritonitis, in which there are universal adhesions without exudation. Tumor-like masses, due to rolled-up omentum, matted intestine, and enlarged glands, may be evident in both the suppurative and obliterative forms. There is wasting, perhaps moderate diarrhœa, and little or no elevation of temperature. Evidences of tuberculosis are apt to be found elsewhere, as in the lungs, pleuræ, lymphatic glands, bones, testes, prostate, seminal vesicles, etc. The tuberculin test may be employed (see Tuberculosis, Pulm.), and a guinea-pig inoculated with the ascitic fluid. Exclude malignant disease, ovarian tumor; (see Ascites), hepatic cirrhosis, and simple chronic peritonitis (*q.v.*)

Intestinal obstruction sometimes occurs; sometimes a fecal fistula.

Prognosis.—A spontaneous cure probably occurs in about 50 per cent. of the cases. The prognosis is most favorable in those cases with miliary peritoneal tubercles and general ascites. The occurrence of fecal fistula renders the prognosis grave.

TREATMENT.—Prescribe rest in bed, fresh air day and night, exposure of the abdomen to the rays of the sun, a nutritious, easily digestible diet, and tonics or alteratives such as codliver oil in small doses, syrup of the iodide of iron, Fowler's solution of arsenic, compound syrup of glycerophosphates, iodoform, creosote or creosote carbonate (for all drugs see Part 11). Says Kerley: "In the non-surgical treatment of these cases the chief points of importance to be considered are nutrition, fresh air, and a thorough daily bowel evacuation." Röntgentherapy (*q.v.*) is used.

Tuberculin injections are recommended, T.R., mg. $\frac{1}{500,000}$ to $\frac{1}{100,000}$ every two to five days, the dose to be increased gradually until the temperature is subnormal, and then continued for at least six months or longer. It should be discontinued temporarily on the occurrence of pain or rise of temperature. (Woodwark; see also under Tuberculosis, Pulmonary.)

For offensive diarrhœa, prescribe bismuth salicylate and guaiacol.

The following local applications are recommended by some for the purpose of promoting absorption of the exudate:

1. Iodoform dissolved in olive oil, gr. xx ad ℥i, or iodoform ointment and codliver oil, aa., rubbed into the skin of the abdomen twice daily.

2. Soft or green soap (sapo mollis), one to four teaspoonfuls, with a little warm water, rubbed into the abdomen every evening, washed off after half an hour, and the skin dried and powdered. If the abdomen becomes irritated, apply the soap to the lumbar region for a time.

3. Linimentum hydrargyri or ung. hydrargyri, ℥ss, spread upon a flannel belt which is stitched around the abdomen.

4. Alcohol compresses, 50 per cent., changed every twelve hours.

If medical treatment is unsuccessful after a trial of from four to eight weeks, perform laparotomy (except where there is extensive tuberculosis elsewhere), and remove any possible focus of infection, *e.g.*, the appendix, cæcum, mesenteric nodes, intestinal ulcers, Fallopian tubes, etc. Avoid trauma and drainage. Many cases recover after a simple laparotomy.

Peritonsillar Abscess.—See Part 9, Throat Diseases.

Perityphlitis.—Gr. περί around + τυφλός blind. See Peritonitis.

Pernicious Anæmia.—See Anæmia, Pernicious)

Pertussis.—See Whooping-Cough,

Petechial Fever.—See Cerebrospinal Fever.

Pharyngeal Cellulitis.—See Ludwig's Angina.

Pharyngitis.—See Part 9, Throat Diseases.

Phlebitis.—Gr. φλέψ vein + -ιτις inflammation. Inflammation of a vein is manifested by local pain and tenderness, often redness and œdema, thickening of the affected vessel, elevation of temperature and increased pulse rate. Thrombosis (*q.v.*) may occur. Its presence is revealed by the absence of damming back of the blood when the vein is compressed on the side near the heart.

In simple phlebitis without thrombosis, recovery usually occurs in from ten to fourteen days.

Etiology.—Traumatism; neighboring inflammation; metastatic inflammation, as in septico-pyæmia, puerperal infection, erysipelas, appendicitis, dysentery, gonorrhœa, syphilis, tuberculosis, pneumonia, influenza, rheumatic fever, typhoid fever, typhus fever, scarlet fever, measles, smallpox, diphtheria, etc.; anæmia, debilitating and cachectic states; gout and rheumatism; chronic passive congestion; bilharziasis; fracture of bone; surgical operations.

TREATMENT.—See Thrombosis

Phlebotomous or Pappataci Fever.—An ephemeral fever of two or three days duration, of abrupt onset, with severe pains in

the head, eyes, and back, malaise and depression, occurring in the Mediterranean countries, and caused by the bite of the sand-fly (Phlebotomus Papatacii), a hairy moth midge with slender legs and leaf-like wings, and so small that it passes through ordinary mosquito netting. The female bites at night. After biting one ill with the disease the midge can transmit the infection only after six to eight days. The virus is filterable. One attack confers immunity.

Phlebotomy.—Gr. φλέψ vein + τέμνειν to cut. See Venesection.

Phlegmasia Alba Dolens; Milk-Leg; White-Leg.—Gr. φλεγμασία heat inflammation; L. *al'ba*, white; *dólens*, painful. See Thrombosis.

Phoresis.—See under Inflammation, Local.

Phosphaturia.—Phosphate + Gr. οὖρον urine. See under Nephrolithiasis.

Phosphorus Poisoning.—See Poisoning.

Phrenic Nerve.—Gr. φρήν the diaphragm. Paralysis of the phrenic nerve is manifested by dyspnœa on exertion, and more or less immobility of the diaphragm, as revealed by the X-rays and by the diminution or absence of abdominal respiration (the abdomen may retract on inspiration and distend on expiration). Exclude immobilization due to diaphragmatic pleurisy, a large pleural effusion, marked emphysema, peritonitis, or fatty degeneration of the muscle following diphtheria.

Hiccough (*q.v.*) is due to phrenic nerve irritation.

Etiology of Paralysis.—Cervical Pott's disease; syphilitic pachymeningitis; intraspinal hemorrhage or tumor; syringomyelia; tabes; progressive muscular atrophy, wounds, or operations; intrathoracic tumors or aneurysm; local neuritis (*q.v.*), for causes; multiple neuritis (*q.v.*), especially following infectious diseases; poliomyelitis.

Prognosis.—This is serious, owing to the tendency to hypostatic pulmonary congestion and pneumonia.

Treatment.—Attend to the cause. In neuritis apply counter-irritation and heat over the lower part of the anterior triangle of the neck. After the acute symptoms have subsided, the mild faradic current for ten minutes daily (one electrode behind the sternomastoid and the other over the epigastrium) may be useful (see Neuritis, for further details.)

Phrenic Neuralgia.—See Neuralgia.

Phthisis.—Gr. φθίσις; φθίειν to consume. See Tuberculosis, Pulmonary.

Piles.—See Hemorrhoids.

Pinworm Infection.—See Oxyuriasis.

Piroplasmosis.—See Kala-Azar.

Pituitarism, Hypo- and Hyper-—Latin *pitúita*, phlegm. See Acromegaly.

Plague.—L. *pla'ga, pes'tis*; Gr. πληγή stroke. A very fatal, epidemic, acute infectious disease of rapid course, caused by the bacillus pestis, (which is transmitted by the rat flea), and characterized by an incubation period of from two to ten days, followed by high fever and prostration, and usually the occurrence of lymphatic enlargement or buboes. Subcutaneous hemorrhages and pustules are of frequent occurrence.

Several clinical varieties of the plague are distinguished, (1) pestis minor, an abortive and ambulatory form with enlarged glands; (2) the ordinary severe bubonic form, with enlarged glands or buboes; (3) a septicæmic or fulminating form, practically always fatal; (4) a pneumonic form, practically always fatal; and (5) an intestinal form.

In case of doubt, inoculate a guinea-pig, mouse, or rat with the contents of a bubo; and observe the symptoms and make cultures from the inoculated animals.

Prognosis.—The disease is usually fatal. If the patient lives through the fifth day, his chances of recovery are said to be good.

Convalescence may begin in the second to the fourth week, and is frequently protracted.

Treatment.—Isolate and quarantine the patient, clean up the premises, killing rats, mice, insects, etc., and fumigate the houses (see Disinfection). Relative immunity against the disease, lasting about four months, is conferred by the subcutaneous injection of Haffkine's dead bacilli, 3.0 to 3.5 c.c. in adult males; 2.0 to 2.5 c.c. in adult females; 1.0 c.c. in children over ten; 0.1 to 0.5 c.c. in small children; a larger dose being given in ten days, its size depending upon the reaction produced by the first dose. This vaccine is said to be harmful if used after infection has occurred.

Purge the patient in the beginning with castor oil or calomel. Lustig's serum (20 to 320 c.c. intravenously or hypodermically every day), which confers passive immunity, should be administered. Bichloride of mercury in large doses, by mouth or intravenously, is recommended.

The general treatment is symptomatic: hydrotherapy for fever (*q.v.*); the ice-cap for headache; early stimulation for heart weakness, employing for this purpose camphor, ether, alcohol, digitalin, and strychnine; ung. hydrargyri for the buboes, which should be incised and drained only when fluctuation occurs. (For drugs, see Part 11).

In simple bubonic cases, quarantine the

patient for three or four weeks after the beginning of convalescence. In pneumonic or septicæmic cases that recover, prolong the quarantine to ten or eleven weeks.

Plantar Neuralgia.—L. *plan'ta*, the sole of the foot. See Metatarsalgia.

Plastic Bronchitis.—Gr. πλαστός formed matter. See Bronchitis, Fibrinous.

Pleural Effusion.—See Pleurisy.

Pleurisy.—Gr. πλευρῖτις inflammation of the pleura. Pleurisy may be fibrinous, serofibrinous, or purulent.

1. Simple fibrinous, plastic, or dry pleurisy is manifested by sharp pain aggravated by breathing, usually cough, perhaps some dyspnœa, often some elevation of temperature, and usually a friction rub on auscultation. In diaphragmatic pleurisy the pain may be abdominal and even associated with muscle-spasm and tenderness. Two common signs of diaphragmatic pleurisy, according to Kelly and Weiss, are tenderness along the ridge of the trapezius in the neck and beneath the twelfth rib posteriorly on the affected side.

2. Serofibrinous pleurisy or pleurisy with effusion is manifested by the following symptoms and signs, viz., pain; cough; dyspnœa; elevation of temperature; diminished respiratory mobility on the affected side, perhaps fullness of the intercostal spaces and increase in size of the affected side, as ascertained by measurement; absence of tactile fremitus over the effusion, except where adhesions exist; dulness or flatness and a sense of resistance on percussion, "corresponding roughly to the position of the fluid" (Cabot), and sometimes slowly changing its level with change in the position of the patient; tympany above the level of the fluid over the condensed lung; a paravertebral triangle of dulness on the opposite side with the apex upward (Grocco); displacement of the heart, especially in left-sided effusion; breath sounds diminished or absent, possibly distant-tubular in quality, especially in children; exaggerated breathing on the sound side.

Pleurisy with effusion is to be distinguished from pleural thickening with pulmonary atelectasis, pneumonia, a large pericardial effusion, hydrothorax, intrathoracic neoplasm, liver abscess, and subdiaphragmatic abscess or hydatid cyst. When in doubt, insert a large hypodermic needle with syringe attachment. A transudate is usually below 1.015 in specific gravity, an exudate usually around 1.020. The presence of blood suggests cancer, but may occur in pneumonia and tuberculosis. Centrifugalize the fluid for five minutes, pour off the supernatant fluid, stir the remaining sediment, and spread a drop of it with a platinum loop on a clear coverglass, dry without heating, and stain as follows: cover with Wright's stain, 3 parts, pure methyl alcohol, 1 part; after one minute add distilled water until a greenish metallic lustre appears like a scum; after about two minutes wash very gently with water by means of a dropper, and dry with the fingers over a flame; mount in Canada balsam and examine with an oil-immersion lens. A great preponderance of lymphocytes indicates practically always tuberculosis; polynuclear leucocytes indicate septic streptococcic, staphylococcic, or pneumococcic infection; large mononuclear (perhaps endothelial) cells indicate a dropsical transudate. (Cabot). Figs. 57, 58 and 59.

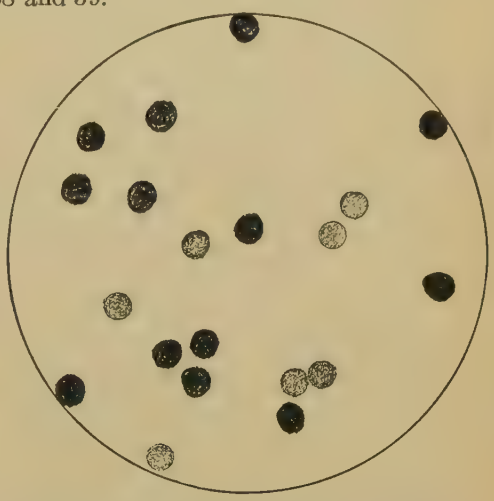


Fig. 57.—Pleural fluid in primary tuberculous pleurisy, showing lymphocytosis (x 750 diameters), (Musgrave).

Serofibrinous pleurisy is usually of gradual onset; but sometimes it is sudden and acute.

3. Purulent pleuritis or empyema presents the signs and symptoms of serofibrinous pleurisy, with in addition the symptoms of septic infection, *e.g.*, weakness, pallor, irregular fever, leucocytosis, and perhaps chills and sweats. Says Osler, "In pneumonia the practitioner should be on the alert if the crisis is delayed or the temperature rises after the crisis, if chills and sweats follow, or if the cough changes to one of paroxysmal type of great intensity." A pleuritis in children is usually purulent. Holt says, when marked dulness or flatness on percussion, feeble breathing, and dis-

placement of the heart are present in a young child, a large hypodermic needle should be inserted repeatedly until a correct diagnosis is assured. In doubtful cases an exploratory incision is justifiable. The

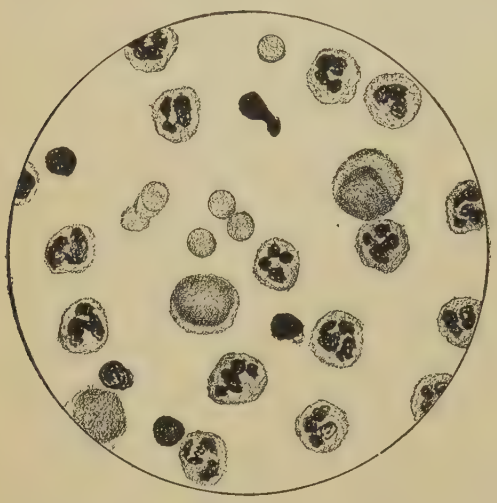


Fig. 58.—Pleural fluid from a case of traumatic acute infectious pleurisy, showing polynuclears and large lymphocytes (x 750 diameters), (Musgrave).

pus is sometimes encapsulated between the lung and diaphragm, lung and chest wall, or the lobes of the lung. The X-ray may reveal these encapsulations.

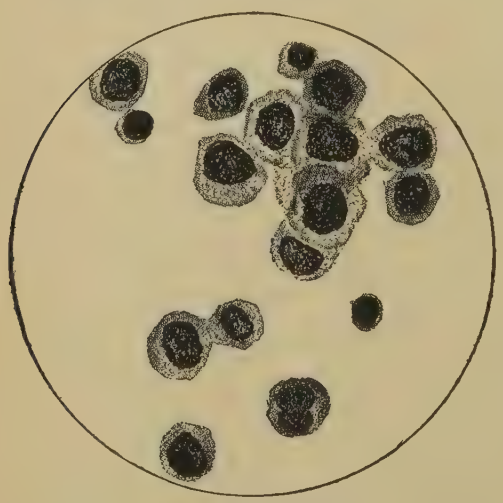


Fig. 59.—Pleural fluid in hydrothorax due to cardiac disease, showing endothelial plaques and cells (x 750 diameters), (Musgrave).

Etiology of Pleurisy.—Exposure to cold and wet; traumatism; bronchial and pulmonary affections (bronchitis, pneumonia, tuberculosis, abscess, gangrene, bronchiectasis, cancer, actinomycosis); infectious diseases (septico-pyæmia, typhoid fever, influenza, measles, scarlet fever); pericarditis; subphrenic suppuration; mediastinal suppuration; œsophageal disease; chronic debilitating diseases; tertiary syphilis.

The organisms concerned are the tubercle bacillus, pneumococcus, streptococcus (especially the hæmolytic), rarely the staphylococcus, typhoid bacillus, diphtheria bacillus, and Friedländer's bacillus. The tubercle bacillus is perhaps the commonest cause of pleuritis.

Prognosis.—Simple dry pleurisy is readily cured. Pleurisy with effusion usually terminates in recovery in from six weeks to three months or longer. Owing to obliteration of the pleural space following the disappearance of the effusion, relapses are rare. Tuberculosis, however, is the commonest cause of pleurisy, which renders the ultimate prognosis uncertain. Pulmonary œdema sometimes occurs in wet pleurisy; also sudden death due to thrombosis or embolism. Empyema is always serious, but with the establishment of free drainage, the outlook is usually good, excepting in infants under one year. Perforation sometimes occurs through the lung, with the expectoration of muco-pus, or through the skin or neighboring organs.

Treatment.—(1) Fibrinous Pleurisy.—Put the patient to bed, and open the bowels. Immobilize the affected side by applying, from below upward, during forced expiration, several well-warmed overlapping strips of zinc oxide adhesive plaster, about three inches wide, and extending from the spine to well over the sternum. It should be removed within seven days. If this affords no relief, employ the ice-bag; or hot water bag; or the Paquelin cautery; or hot linseed poultices; or mustard poultices (1 : 2, every six to eight hours); or the hot turpentine stupe (Part 11); or tincture of iodine; or menthol, gr. iiss, and cocaine hydrochloride, gr. i, in vaseline, ʒi; or phenacetin or antipyrin, gr. v–x, with salol or aspirin, gr. x–xv; or codeine, gr. ¼ to ½; or morphine, gr. ⅙ to ⅛, repeated in one hour, if necessary.

Prescribe fresh air day and night, an abundance of easily digestible food, elixir of iron, quinine, and strychnine, one teaspoonful, well diluted, after meals, and correct hygiene generally, as in tuberculosis (*q.v.*).

After recovery, instruct the patient in the practice of respiratory exercises, for the purpose of preventing adhesions and their possible sequelæ, *e.g.*, bronchiectasis, chronic pneumonia, and chest deformities.

(2) Serofibrinous Pleurisy.—In the presence of effusion, early tapping was for-

merly considered the proper procedure, but is now regarded as "rarely necessary or advisable" (Webster). The presence of fluid may serve a useful purpose by splinting the lung. The withdrawal of even a small quantity of fluid is often followed by rapid absorption of the remainder.

Potain's air-tight apparatus, with thick, incollapsible rubber tubing and trocars with a lateral outlet, may be used. (Fig. 60.) It should be air-tight to prevent pneumothorax (always test the apparatus, and boil it before using, and see that the air in the bottle is under negative pressure). Before aspirating, the patient may be given morphine as a sedative, if deemed advisable. It is well to have at hand a syringeful of a 10 per cent. solution of camphor in ether or oil, another

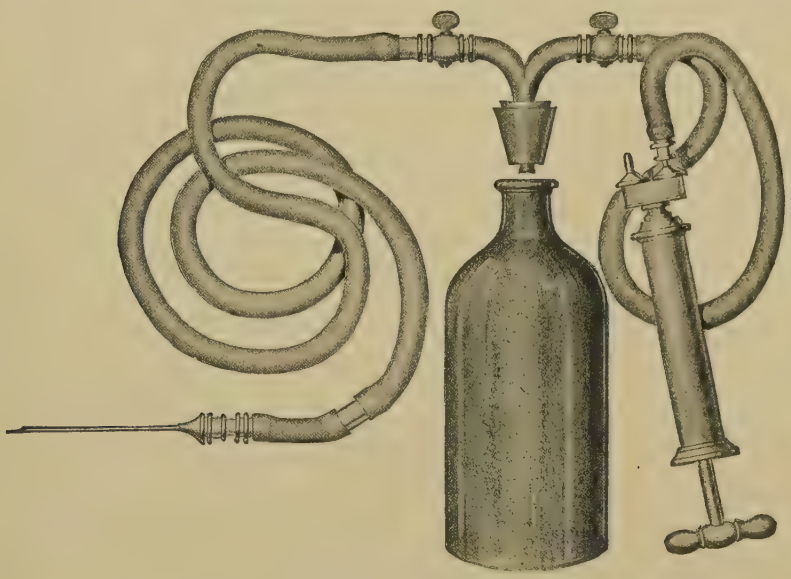


Fig. 60.—Apparatus for aspiration (Kerley).

of strychnine, gr. $\frac{1}{30}$, and smelling salts, brandy, or whiskey. With the patient in the sitting posture, and the hand on the opposite shoulder, select the seventh or eighth interspace between the scapular and posterior axillary lines; or the fifth or sixth interspace in midaxilla (in large or medium effusions); or the interspace which lies just below the angle of the scapula when the arm is advanced and drawn across the chest, and about an inch in front of the posterior axillary line (Yeo.) A mark may be made at the selected site of puncture with an indelible pencil. Wash the skin with soap and hot water, dry thoroughly with sterile gauze, and paint with tincture of iodine. Anoint the trocar with sterile oil or vaseline, and introduce it just above the rib by a quick, firm thrust, with the tip of the index finger about four centimetres from the point of the trocar (the thoracic wall is about 2 to 4 centimetres thick); push it in until no resistance is felt. Some press the nail of the left forefinger into the intercostal space, and insert the point of the trocar above it. Use only just sufficient aspiration to maintain the flow. In large effusions, from 1000 to 1500 c.c. (1 to $1\frac{1}{2}$ quarts) may be safely removed as a rule, but the withdrawal should occupy about half an hour. The safety diminishes with the duration of the effusion and the age of the patient. Stop at once should the patient begin to cough immoderately, the pain become severe, or bloody or albuminous expectoration, severe dyspnœa, or faintness occur (pulmonary œdema, due to sudden expansion of the lung).

Lacking the Potain aspirator, one may employ Cantlie's method: The aspirating needle is attached to a rubber tube, the free end of which is tied into a test-tube; the whole apparatus is filled with sterile normal saline solution (℥i ad Oi), and the rubber tube clamped; the needle is now inserted and the clamp removed, and a siphon action is thus set up; the overflow is caught in a basin, and the flow is regulated by raising and lowering the test-tube.

After the operation has been completed, seal the wound with a thin wisp of sterile cotton saturated with collodion. Keep the patient in bed for about a week; and at the expiration of another week, cautiously begin respiratory exercises for the prevention of adhesions, unless there are present fever, pain, fluid, or active pulmonary disease.

Begin with deep inspirations, repeated six to twelve times every two hours; or the slow inflation of a large rubber bag; or the blowing of water from one Wolff's bottle to another (see Fig. 61). Later, with both arms outstretched at right-angles with the body, bend the thorax toward the sound side during inspiration.

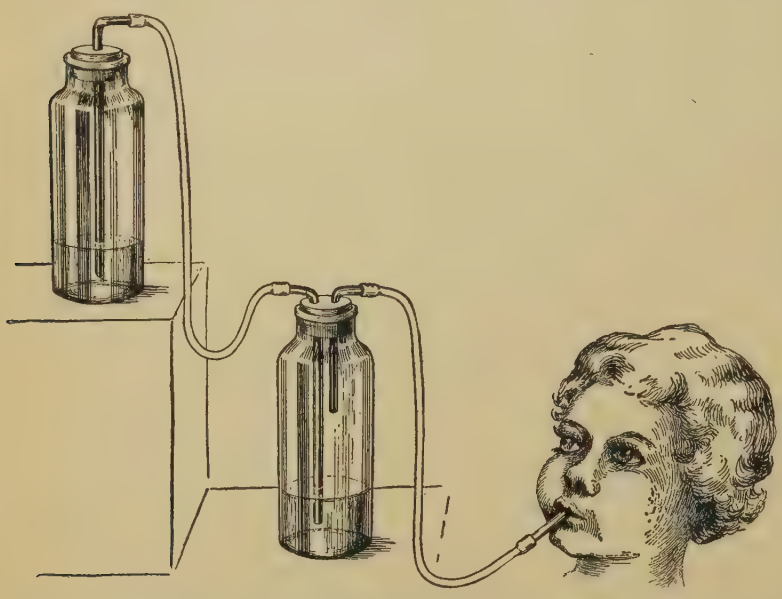


Fig. 61.—Wolff's Bottles containing colored water, to be blown from the lower to the higher bottle as a respiratory exercise for the prevention of pleural adhesions following pleuritis. (Holt.)

A repetition of the tapping is rarely required.

3. Empyema.—The treatment of pyothorax is surgical; but thoracotomy or costectomy had better be deferred until the stage of acute illness has been passed (usually two or three weeks in hemolytic streptococcus cases), the pleural exudate, at first sero-fibrinous, has become frankly purulent, and limiting pleuritic adhesions have formed which prevent pulmonary collapse from pneumothorax during operation. In the sero-fibrinous stage aspiration should be resorted to as often as necessary to relieve pressure symptoms. The patient should be generously fed (3000 to 3500 calories daily), particularly in streptococcus cases, and water should be administered freely by mouth, rectum, or subcutaneously.

An X-ray (*q.v.*) taken after the fluid has been withdrawn will show the number and distribution of pus pockets.

After the acute inflammatory process has subsided, and walled-off pus accumulations have appeared, one or two ribs with the periosteum are resected over the pus site and the cavity packed lightly with gauze. The occurrence of perforation in any direction does not render operation unnecessary. In double empyema one side only should be operated on at one time, and the other side after an interval of four to seven days, to avoid collapse of the lungs. In employing local anæsthesia with novocaine (*q.v.* in Part II), first infiltrate the skin and subcutaneous tissues, then block the intercostal nerves of the rib to be resected and also the rib above by injecting the subcostal grooves near the angles of the ribs (near the spine). General ether anæsthesia may be employed if desired.

The drainage gauze, says S. Robinson, should be covered with a large rubber sheet or dam covering the skin beyond the gauze and smeared with ointment where it covers the skin, so as not to admit air, the object being to close the drainage opening during inspiration while allowing evacuation of pus during expiration, and thus afford a valvular action admitting of expansion of the lung and the avoidance of a permanent cavity or chronic empyema.

A. McGlannan expedited and increased his cures by using Brewer's flanged drainage tube connected with a two-quart bottle and the latter with a small hand exhaust-pump, as shown in Fig. 62. The suction is continued for two to four weeks. A water pump may also be used for continuous suction. The rubber collar of the drainage tube is sutured to the skin and hermetically sealed with gutta-percha or with vaseline and adhesive plaster.

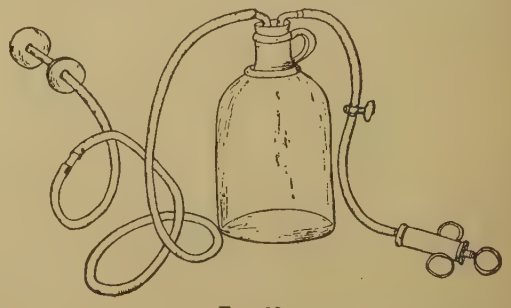


Fig. 62.

Phillips' apparatus, consisting of a special cannula surrounded by a rubber, air-tight suction cap, a bottle, a negative pressure manometer, and a suction pump, connected in the order named by means of rubber tubing, provides continuous non-obstructible drainage without danger of pulmonary collapse from atmospheric pressure. A continuous negative pressure of 30 to 60 mm. of mercury is employed until the empyema sac has been obliterated and firm adhesions have formed between visceral and parietal pleuræ, when the cannula is withdrawn.

The Carrel-Dakin treatment (see under Wounds) of empyema is of value. The drainage aperture should be closed when the cavity is surgically clean. Says Bainbridge, quoting Depage, " There is no reason to fear the result of closing the opening in the thoracic wall before the lung is expanded and the cavity filled up, for this procedure is the most successful method of inducing rapid expansion of the lung and obliteration of the pleural cavity."

Following operation for empyema the patient should be instructed to practice forced expiration once or twice a day by blowing through a tube into a pneumatic cushion with the tube strictured by means of a string tied around it, or by blowing water from one Wolff's bottle to another, the bottles for children holding at least a gallon each (see Fig. 63), with the object of expanding the lungs and preventing the formation of restricting adhesions. For children, " one bottle is placed a few inches higher than the other, and the child blows a colored fluid from the lower into the higher bottle, allowing it to siphon back" (Holt). The child may also blow soap bubbles.

A persistent temperature or a rise of temperature following operation may mean defective drainage, or pneumonia, or pulmonary abscess, empyema of the opposite side, pericarditis, otitis media, etc.

As a rule, healing occurs in from three to six weeks. Strict aseptic precautions should be observed in changing dressings, to avoid secondary infection.

In long neglected cases and in operated cases in which no provision was made for the re-expansion of the lung, the latter remains permanently retracted (chronic empyema). In such cases Beck's bismuth and vaseline paste, 10 per cent. (see Part 11), may be tried. If it fails, decortication of the lung or an osteoplastic rib-resection is required. Lilienthal's procedure is as follows: First disinfect the cavity by the Carrel-Dakin method for four to six days, bearing in mind that the presence of a minute bronchial fistula will lead to the " gassing " of the patient. Then, under anæsthesia by intrapharyngeal insufflation (hereinafter described), and with the patient in the posture previously described, make an incision in the seventh interspace, close to the upper border of the rib from its angle to the cartilage, avoiding the sinus. Divide from one to four ribs with rib forceps at the posterior angle of the wound, and then employ the rib spreader. Mobilize the lung by incising the tough visceral pleural membrane from the apex of the cavity to the base and peeling it off, making cross incisions if necessary; then have the anæsthetist inflate the lung as far as possible. If it is impossible to mobilize the lung, due to pulmonary fibrosis, a later " collapse operation " may be required. After mobilizing the lung, insert a forceps into the cavity through the old sinus and draw out a piece of iodized gauze; then draw through a rubber tube " just long enough to reach the inside of the chest." If the divided ends of the ribs tend to overlap, resect a small portion. Now close the wound in layers, using chromicized catgut for the muscles and silk for the skin. Administer morphine

Fig. 63.

for the first twelve to twenty-four hours following the operation, and start blowing exercises as soon as the patient is well out of the anæsthesia.

Intrapharyngeal etherization is accomplished as follows: The apparatus consists of an ether bottle with two tubes through the stopper, one dipping into the ether and the other conveying the ether vapor, a catheter of the calibre of about 14 F., and a foot bellows or hand bulb with a secondary bulb like that of Paquelin's cautery. After the patient is anæsthetized by means of the ether mask, the catheter is passed through the nostril as far as but no farther than the pharynx (about 3½ inches, marked on the tube with a piece of adhesive plaster). To distend the lung the opposite nostril is closed and the hand placed over the closed mouth. (Lilienthal.)

A tuberculous empyema should not, as a rule, be opened; but aspiration may, perhaps, be allowable, under strict aseptic precautions.

Pleurodynia; Intercostal Myalgia.—Gr. *πλευρά* rib + *ὀδύνη* pain. See Myalgia.

Plumbism.—L. *plum'bum*, lead. See Lead Poisoning.

Pneumatosis.—Gr. *πνεῦμα* air. Distension of the stomach with air that cannot be expelled owing to the coexistence of pylorospasm and cardiospasm. Sometimes alarming symptoms of dyspnœa and collapse occur, and the stomach is noted to be greatly distended and tympanitic.

Causes. — Atonic dilatation; neurasthenia; hysteria.

Treatment.—Treat the underlying condition. Administer a subcutaneous injection of morphine and atropine. Pass the stomach tube, if necessary.

Pneumogastric Nerve.—Gr. *πνεύμων* lung + *γαστήρ* stomach. (See Vagus Nerve.)

Pneumokoniosis.—Gr. *πνεύμων* lung + *κόνις* dust. Impregnation of the lungs with dust, *e.g.*, the dust of coal, iron, brass, bronze, stone, clay, cotton, shoddy, grain, street dust, etc., with resulting fibrosis, chronic bronchitis, and usually emphysema. The sputum is colored according to the nature of the causal agent—black with coal dust, red with iron dust, etc.

The Prognosis is good if the cause is removed in time.

Treatment.—Correct the cause by means of respirators, proper ventilation, etc. The treatment is that of chronic bronchitis and emphysema.

Pneumonia, Chronic Interstitial.—See Pulmonary Cirrhosis.

Pneumonia, Lobar.—Gr. *πνευμωνία* from *πνεύμων* lung. An acute infectious, sometimes epidemic disease, caused usually by the pneumococcus of Fränkel (of which there are four types), sometimes by the streptococcus, staphylococcus, or Friedländer's bacillus pneumoniæ, and characterized by a croupous or fibrinous inflammation of the lungs, with the following symptoms and signs, viz., onset usually sudden, with a severe chill, followed by pain in the side or abdomen, fever, leucocytosis, cough and dyspnœa; herpes commonly present; cheeks flushed, especially the one on the side of the lesion; sputum scanty and viscid, usually becoming rusty after several days; on percussion, dulness (sometimes tympany) and a sense of resistance over the affected area (do not neglect the axillæ); on palpation, usually increased vocal fremitus; on auscultation, at first crepitant râles and diminished vesicular murmur, which later becomes bronchovesicular, and later tubular with disappearance of the râles (râles reappear when resolution sets in); duration usually from five to ten days (possibly one to twenty-one days); termination usually by crisis, sometimes by lysis; in about 20 per cent., more or less, by death.

The fever is usually continuous; it may be remittent; sometimes it is relapsing (pseudo-crises). In asthenic and senile cases it may be continuously normal or subnormal.

The physical signs of pneumonia sometimes do not appear until after the crisis; indeed the disease is often atypical. An X-ray picture furnishes valuable diagnostic information.

In cases of delayed resolution, consider the possibility of tuberculosis, pleurisy with effusion, or empyema, interlobar or parietal.

Pleurisy (serofibrinous or purulent) is the commonest complication of pneumonia. The following occur but rarely: pulmonary abscess, pulmonary gangrene, pneumothorax, meningitis (meningismus, with headache, vomiting, delirium and cervical retraction is quite common), gastric and intestinal disturbance, endocarditis, pericarditis, peritonitis, parotitis, arthritis, sinusitis, otitis media, mastoiditis, conjunctivitis and keratitis, neuritis, venous thrombosis and embolism, jaundice, nephritis, mediastinitis, subphrenic abscess, hemiplegia (embolic or toxic).

Etiology.—Predisposing influences are: Winter and spring; dry climate; exposure to cold or wet; poor hygiene; traumatism; inhalation of irritating fumes or dust; aspiration of foreign material; other

diseases; alcoholism; senility; infancy and early childhood; a previous attack of pneumonia.

Prognosis.—The mortality is about 20 per cent., more or less. A pulse rate in adults of over 125, and an irregular pulse before the crisis, are serious (Mackenzie). Should the pulse-beat per minute rise above the systolic blood-pressure expressed in millimetres of mercury, the condition is very serious (Gibson). There is a tendency to collapse at the crisis, which is usually overcome by stimulation. Named in the order of virulency are types III, II, I, and IV of the pneumococcus. Types I and II predominate as a cause of pneumonia.

Treatment.—(Treat children as described under Bronchopneumonia.) The windows of the sick-room should be kept open day and night, and the patient screened against draughts. A continuous supply of fresh air is of the very first importance. The room temperature, in sthenic cases, should not be allowed to exceed 65° F.; for asthenic cases it should be comfortably warm, *i.e.*, 70° to 72° F. Hot water bottles may be placed at the feet if desired, and if the temperature is not high. Light woolen underclothing should be worn, and the bed covering should not be heavy. The patient should not be allowed out of bed; a bed-pan and urinal should be used. He should be kept quiet, and should not be overburdened with excessive attention.

At the onset the bowels should be opened with calomel, or castor-oil, and a daily movement should thereafter be secured by means of enemata or salines (see Part 11).

The mouth and nose should be kept clean with Dobell's solution (Part 11), and the whole body should be sponged daily with tepid water.

Feed the patient, whether adult or child, no oftener than every three hours, and give only liquid or semi-liquid food while there is fever, *e.g.*, milk, with or without lime-water or Vichy, eggs, beef-juice, scraped meat, broths, gelatine, and well-cooked thin gruels of rice, barley, wheat, or oatmeal, which may be partly predigested, if desired, with pancreatin or taka-diastase (*q.v.* in Part 11). Calcium glycerophosphate, ʒi daily (Barr), may be given to supply the deficiency in calcium which occurs in pneumonia. An abundance of salt is also advised. Water should be given freely—4 to 8 ounces every hour or two. Keep a pitcher of cream of Tartar lemonade at the bed-side (1 teaspoonful cream of Tartar dissolved in 1 pint or 1 quart of boiling water, cooled and flavored with sugar and lemon). The following old-fashioned fever mixture may be prescribed partly as a placebo:

℞ Spiritus ætheris nitrosi .... ʒii (ɱv per tsp.)
Potassii citratis..... ʒi (gr. iiss per tsp.)
Liquoris ammonii acetatis.. ℥iss (ʒss per tsp.)
Syrupi simplicis..... ʒi
Aquæ camphoræ, q.s., ad.. ʒiv

M. Sig.—One teaspoonful (for three-year-olds) to one tablespoonful (for adults) every three hours.

Some recommend creosote carbonate, gtt. v, in milk, a bitter tincture, brandy, or wine, every two to four hours; some recommend quinine, gr. i–iii, every two to four hours "according to the age of the patient and the severity of the case" (Author?). Quinine is an antipyretic and a heart stimulant.

℞ Quininæ sulphatis..... gr. i–iii
Acidi citrici..... gr. x–xv
Sacchari lactis..... gr. x
Misce, fiat pulvis.

Sig.—Dissolve in a little water and add to the following draught:

℞ Potassii bicarbonatis..... gr. x–xv
Ammonii carbonatis..... gr. iii–v
Syrupi aurantii..... ʒi
Aquæ, q.s., ad..... ʒi
Misce, fiat haustus. (Yeo.)

Aufrecht injects gr. vii of quinine hydrochloride intramuscularly in the late afternoon, when the fever is highest, and repeats it when required for high fever within forty-eight hours, which is rarely necessary.

℞ Quininæ bihydrochloridi..... gr. lxxv
Aquæ destillatæ, q.s., ad..... ʒiiss

Boil, then add one or more drops of hydrochloric acid to dispel the turbidity. Fourteen minims contain 7 grains of quinine.

Camphor has been recently advocated as an anti-pneumococcic agent; camphorated oil (boiled; not the liniment), 10 c.c. subcutaneously twice daily (Hötzel); also optochin (see Part 11).

Serum therapy (antibacterial) is of value in the cases due to Type I and probably Type II infection. The dose for adults, according to Rufus Cole, is at least 75 to 100 c.c., intravenously (*q.v.*), repeated every six or eight hours until effectual. (See Anaphylactic Shock, for the method of its avoidance). To determine the type of pneumococcus causing the infection, wash a small portion of the lung sputum several times with sterile salt solution (0.9 per cent.), grind it in a sterile mortar with about 1 c.c. of bouillon, and inject this into the peritoneal cavity of a mouse. In about four to

eight hours, or as soon as the bacteria have multiplied sufficiently, as determined by withdrawing fluid through a capillary pipet and staining and examining microscopically, kill the mouse, and wash out the peritoneal cavity with sterile salt solution. Centrifugalize at low speed to throw down the cellular debris, pipet off the supernatant fluid containing the bacteria, and throw down the latter by centrifugalization at high speed. Resuspend in salt solution, and treat with each of the four types of sera to see which type produces agglutination. (Dochez.)

Mustard poultices applied to the whole chest, front and back, three to six times daily, or as required, are very valuable, especially for dyspnœa, circulatory failure, and cough. Employ at first a strength of one part mustard to two of flour, later reducing the strength as the skin becomes sensitive. Keep the poultice on for five to fifteen minutes, or until flushing is produced, then anoint the chest with camphorated oil or equal parts of lard and turpentine, and cover with a light piece of flannel. Musser employs dry cups (*q.v.*) "all over the lungs, front and back, to the number of twenty or thirty." They are employed early, and " repeated every six or eight hours as long as pain persists, the dyspnœa or oppression continue, or the respiration rate rises." Dry cupping is a substitute for bleeding, which some advocate in robust, plethoric patients during the first or second day (250 to 500 c.c. of blood).

For pain, employ the ice-bag, hot water bag, Paquelin cautery, mustard poultice, dry cups, strapping from the spine to the sternum, or morphine, gr. $\frac{1}{6}$, hypodermically (no morphine if the patient is over fifty, or has nephritis); Dover's powder is very serviceable.

For severe, distressing cough, prescribe codeine, or heroin, or morphine, with discretion (see Part 11, for all drugs).

For a temperature of 102° F. or over, and for restlessness and delirium, or stupor, rapid pulse, dyspnœa and cyanosis, dry tongue and dry skin (severe toxæmia), employ an ice-cap to the head, and cool sponging every three hours; or the cool pack covered with dry flannel or a woolen blanket, and changed every hour; or cold linen compresses reaching from the clavicles to the umbilicus, changed every half-hour when the temperature is above 102°, every hour when below 102°, and discontinued when the temperature is 99.5°. Hot water bottles may at the same time be placed to the feet, or a hot mustard foot-bath (about one tablespoonful to the gallon) may be employed for about thirty minutes, or until sweating ensues. As a last resort, to procure sleep, administer Dover's powder, gr. i–iii, every three hours; or morphine, gr. $\frac{1}{6}$ to $\frac{1}{4}$; or hyoscine, gr. $\frac{1}{100}$ to $\frac{1}{50}$.

For circulatory failure (watch the pulse, blood-pressure, and first sound of the heart), prescribe whiskey or brandy, 4 to 12 ounces in twenty-four hours (condemned by some); strychnine, gr. $\frac{1}{40}$, every three hours; digitalis infusion, ʒii, or tincture, ♏x–xv, well diluted, or digitalin (*q.v.*) intramuscularly, every four hours; tincture of strophanthus, ♏v-viii, every two to four hours; atropine; hot norm. sal. infusion or enema, 500 c.c., if the urine is scanty. In an emergency employ, hypodermically, camphor, gr. ii, in olive oil or ether, ♏x–xv; or digitalin; or caffeine sodiobenzoate or sodiosalicylate, gr. $\frac{1}{4}$ to $\frac{1}{2}$ to 2. The occurrence of pulmonary œdema calls for prompt and energetic stimulation: strychnine, gr $\frac{1}{20}$, with atropine, gr. $\frac{1}{100}$, hypodermically; venesection; many dry cups.

With cyanosis and rapid shallow respirations, oxygen may be administered very slowly through a funnel draped with a curtain and held over the mouth and nose. Says L. E. Hill, pure oxygen may be breathed for two to four hours continuously without harm; and an atmosphere of 50 per cent. oxygen can be breathed indefinitely. He says: " The cylinder valve must be opened wide enough to give a pleasant cool current (as tested upon the lips), and drive the exhaled CO_2 out of the mask." Hill's mask should be very useful (made by Messrs. Davis Bros., St. Thomas's St., London, S. E.). Osler regards oxygen as of doubtful value.

For tympanites, reduce the diet, prescribe a laxative, give a turpentine and soapsuds enema (ʒss to the enema), apply hot turpentine stupes to the abdomen or an ice-bag if the temperature is high, and inject ergot intramuscularly, or eserin hypodermically, or best of all, pituitrin. The colon tube may give relief.

For herpes, apply spirits of camphor, or comp. tincture of benzoin, or boric or zinc oxide ointment.

At the crisis administer diffusible stimulants in hot water, *i.e.*, aromatic spirits of ammonia, or Hoffmann's anodyne; together with strychnine, gr. $\frac{1}{20}$, or atropine, gr. $\frac{1}{100}$ hypodermically; and apply hot water bottles to the feet and body.

For delayed resolution, the X-rays (*q.v.*)

are highly recommended. Mustard poultices (twice or thrice daily), dry cups (twice daily), tincture of iodine, or the Paquelin cautery may aid in promoting absorption of the exudate. Fibrolysin may be tried.

Convalescence is usually rapid, and the patient may, as a rule, be allowed up in about a week; that is, for an additional half-hour each day until he is up all day. The condition of the heart should serve as the guide in this matter. The return to normal diet should be gradual.

Pneumonokoniosis.—See Pneumokoniosis.

Pneumopericardium.—Gr. *πνεῦμα* air + *περικάρδιον* pericardium. An extremely rare, usually fatal affection, manifested by bulging of the precordial intercostal spaces; feeble or absent and invisible cardiac impulse, returning on the assumption of the prone position; movable tympany, which disappears when the prone position is assumed; and, on auscultation, churning, gurgling, splashing, and tinkling sounds synchronous with the heart-beat.

Etiology.—Gas-bacillus infection; traumatic perforation caused by a crushing injury, a fractured rib, paracentesis, the rupture of adhesions in pneumothorax, or a foreign body from without or from the œsophagus; ulcerative perforation occurring in pyopneumothorax, pulmonary or lymphatic tuberculosis, pulmonary gangrene, gastric cancer, gastric ulcer, œsophageal cancer, or subphrenic abscess perforating both the pericardium and stomach or pericardium and intestine.

Treatment.—In traumatic cases the opening should be closed at once. In the case of putrid or purulent effusions, free drainage should be established by a sufficient opening.

Pneumothorax.—Gr. *πνεῦμα* air + *θώραξ* thorax. The condition is almost always a hydro- or a pyo-pneumothorax, and the commonest cause, perhaps in 90% of the cases, is tuberculosis. The onset is usually sudden, with sharp pain, urgent dyspnœa, rapid pulse, and pallor; but it may be very gradual, and even imperceptible. The physical signs are as follows: enlargement and immobility of the affected side, displacement of the heart and diaphragm (the X-ray furnishes important information); vocal fremitus usually greatly diminished or absent; percussion note usually hyperresonant or tympanitic, sometimes normal or dull if the air is under great tension; rapid movable dulness in the presence of fluid; respiratory murmur usually diminished and amphoric in quality, the râles possessing a metallic tinkle; clear, ringing coin sound, obtained by auscultating the back of the chest while an assistant taps one coin on another on the front of the chest; succussion splash in the presence of fluid, obtained by shaking the patient with the ear to the chest.

Pneumothorax is simulated by hernia of the intestine through the diaphragm.

Etiology.—Pulmonary disease, usually tuberculosis, rarely gangrene, infarction, tumor, or septic broncho-pneumonia; empyema perforating the lung; infection of a pleural exudate with the gas bacillus; perforation of an abscess or hydatid of the liver into the lung, or of a gastric ulcer, or an appendicial abscess, or a cancer of the stomach, colon, or œsophagus; penetrating wounds of the chest (stab and gunshot wounds, rib fracture, thoracentesis); rupture of the lung by concussion; spontaneous rupture of air vesicles following exertion, or occurring even while at rest.

Prognosis.—In tuberculous cases the outlook is unfavorable, death usually occurring within a few weeks. In the rare spontaneous cases recovery occurs in from one week to several months. In other cases the prognosis depends upon the cause and upon whether or not infection occurs.

Treatment.—In the acute suffocative or valvular cases, in which air readily enters but can not leave the pleural cavity, insert a cannula at once, and leave it in. Give morphine for the severe pain and dyspnœa; and for the circulatory failure give rapid stimulants hypodermically, viz., camphor, gr. ii in olive oil, or ether, ɱx–xv; or digitalin (*q.v.*); or caffeine sodiobenzoate, gr. ¼ to ½ to ii; or aromatic spirits of ammonia, one teaspoonful in a tumblerful of water; and apply heat. If necessary, a large opening may be made, and a rigid drainage tube with a rubber collar inserted, the collar sutured to the skin, and then hermetically sealed with gutta-percha or with vaseline and adhesive plaster. To the rigid tube is attached a small soft rubber tube, which easily collapses on inspiration (see under Empyema).

In chronic cases, whether blood, serum, or pus is present, it is perhaps advisable not to tap or to perform rib resection, unless septic symptoms arise or the rapid accumulation of fluid causes increasing dyspnœa.

In the spontaneous cases, enjoin absolute quiet in bed, and the avoidance of deep breathing.

Pneumothorax, Artificial.—Nitrogen compression of the lung by means of an artificially induced pneumothorax is indicated as a therapeutic agent in unilateral tubercu-

losis, the opposite lung being but slightly affected, in uncontrollable or chronic hæmoptysis, the side on which the hemorrhage occurs being, of course, known, and in bronchiectasis that is otherwise incurable. Murphy insisted that it should be used early in tuberculosis, and not reserved as a last resort. It is sometimes very successful, but often not.

Contra-indications: Extensive involvement of both lungs; extensive cavitation in the affected lung, with danger of the needle entering a cavity; pleurisy, dry or wet, if large; extensive pleural adhesions; a serious complication, such as cardiac or renal disease, alcoholism, intestinal tuberculosis, or other serious constitutional disease; abdominal distention due to ascites or tympanites; marked pain, dyspnœa, or subcutaneous emphysema following inflation.

Technique.—There are various makes of apparatus, viz., Forlanini's, Deneke's, Floyd-Robinson's, Muralt's, Kornmann's, etc. A hypodermic of morphine, gr. $\frac{1}{6}$, one-half hour before the operation, may be advisable, and it is well to have brandy or whiskey and a hypodermic of ether on hand in case of shock. The puncture is ordinarily made below the angle of the scapula between the scapular and post-axillary line. Murphy taught that when the pulmonary lesion was in the apex, "the needle should be inserted in the 5th or 6th space, between the anterior and mid-axillary line," and when the lesion is in the middle or lower lobe, the needle should be inserted "preferably in the 4th space, just outside the mammary line." The patient should be in bed, with a pillow under the sound side, and the hand of the affected side on the opposite shoulder, The skin is cleansed with soap and water, thoroughly dried with sterile gauze, painted with tincture of iodine, anæsthetized with novocaine (*q.v.* in Part 11), a tenotome puncture made down to the pleura, and the latter then anæsthetized (to avoid pleural shock). After waiting for several minutes for anæsthesia to occur, the pneumothorax needle is introduced slowly at right-angles with the chest wall. The entrance of the needle into the pleural cavity is indicated by the respiratory oscillations (negative in pressure) of the fluid in the manometer. These oscillations should always be obtained before the nitrogen gas is turned on, and, according to Floyd, they should register an excursion of 1.5 to 2 cm. The needle should be kept always perpendicular to the chest wall. The gas is introduced slowly, not more than 300 to 500 c.c. at the first inflation, except in the presence of serious hemorrhage, when 1000 c.c. or more may be required. The inflation should be stopped and the needle withdrawn on the first appearance of distress, pain or dyspnœa. The puncture may be sealed with a wisp of sterile cotton saturated with collodion.

Reinflation is practiced at first every two or three days until neutral or slightly positive readings of the manometer show that the lung is adequately compressed. After this, reinflation is practiced about every eight to twelve days, or often enough to keep the lung compressed. Later the intervals may be lengthened up to about four weeks. Continuous compression should be maintained for, perhaps, a year or two.

The patient should be kept strictly at rest after each inflation. Serous pleural effusion is a common complication of artificial pneumothorax, but, if moderate, it does not contraindicate continuation of the treatment.

Podagra.—Gr. *πούς* foot + *ἄγρα* seizure. See Gout.

Poisoning.—Under this caption are considered (1) poisoning by drugs, chemicals, plants and food; and (2) insect and snake poisoning.

I. Drug, Chemical, Plant, and Food Poisoning.—When called upon to treat a case of poisoning in which the nature of the poison is unknown, first see if the mouth is stained If it is stained, the poison is either an acid (nitric, hydrochloric, sulphuric, carbolic, oxalic), or it is an alkali (caustic potash, caustic soda, ammonia). In such cases no emetic should be given. To neutralize acids, administer a warm alkaline solution, *e.g.*, lime water, baking soda (sod. bicarb.) solution, washing soda (sod. carb.) solution, soap solution, chalk, magnesia, wall plaster; but give no soda or potash in oxalic acid poisoning (see appended table). Avoid chalk and other carbonates if other alkalies are obtainable. To neutralize alkalies, administer an acid, *e.g.*, vinegar and water, equal parts, or lemon juice. The mouth should always first be washed out with the antidote. A soft stomach tube may be used if no extensive corrosion is present. Give demulcent drinks (see below). If the throat is swollen and breathing difficult, apply cold or heat to the neck, and perhaps to the sternum, stomach, or back, and give frequent sips of ice-water. Give morphine for pain. The patient may have to be fed per rectum (see Rectal Feeding), or through a gastrostomy opening, or a duodenostomy opening if the pylorus is involved. Œsophageal bougies should be passed, according to Sippy, seven

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to ten days afterward; according to Gottstein, not for four to six weeks (see Œsophageal Stenosis or Stricture).

If the mouth is found not to be stained, vomiting may be induced by means of mustard, a tablespoonful in half a pint of lukewarm water; or salt, two tablespoonfuls in half a pint of tepid water; or syrup or wine of ipecac, for a young child a teaspoonful and for an adult a tablespoonful every fifteen minutes until effectual; or zinc sulphate, ʒss, in half a pint of water; or copper sulphate, gr. xv, in water; or apomorphine, gr. $\frac{1}{20}$ to $\frac{1}{10}$ hypodermically. Any of the above may be repeated in fifteen minutes, if necessary, and the finger may be inserted in the throat. In place of emesis, gastric lavage may be practiced repeatedly.

In any case of poisoning whatever, administer, either before or after the stomach has been evacuated, milk, raw eggs, or two to six whites beaten up with milk or water, cream and flour beaten up together, some animal or vegetable oil (except in phosphorus poisoning, *q.v.*), flaxseed infusion, slippery elm infusion, mallow decoction, mucilage of acacia or tragacanth, a tablespoonful every fifteen to thirty minutes, emulsion of almonds, 10 oz., thin gruels, hashed meat, strong tea, bismuth subcarbonate and acacia or tragacanth, 1 to 2 oz. of a 5 per cent. suspension, two to three times daily.

Strong tea and other tannic acid preparations (kino, catechu, oak-bark, tannic acid), gr. xx–xl in a half to one tumblerful of water every fifteen to sixty minutes, are of special value in vegetable poisoning or poisoning with alkaloids, glucosides, etc. Lavage (see under Dyspepsia), or a brisk saline cathartic (avoid salines, however, in toadstool poisoning) should follow the administration of the tannic acid preparations, since the tannates slowly become absorbed. In alkaloid poisoning one may also give potassium permanganate, gr. iv–v in a pint of water, or Lugol's solution (Part 11) in doses of ♏xx–xxx in water. The stomach may be washed out with a light pink solution of the permanganate. The free administration of charcoal in teaspoonful doses delays absorption.

After the stomach has been evacuated, free purgation should be promoted in all cases (castor-oil: 2 oz. for adults, children in proportion); supplemented perhaps by high intestinal irrigations.

Treat shock and collapse by means of hot applications and the hypodermic administration of stimulants, *e.g.*, caffeine sodiobenzoate, gr. $\frac{1}{4}$ to $\frac{1}{2}$ to ii; camphor, gr. ii, in sterile olive oil, ♏x, every half-hour for several doses; or strychnine, gr. $\frac{1}{30}$ to $\frac{1}{20}$ every four hours, or until muscular twitching occurs; atropin, gr. $\frac{1}{100}$ to $\frac{1}{50}$ (more than gr. $\frac{1}{50}$ is depressant); whiskey or brandy, 1 to 2 oz., repeated every few hours· enema of brandy 3 oz., in strong black coffee up to 1 pint; normal saline (0.9 per cent.) subcutaneous or intravenous infusion (no more than one to two quarts at a time, for fear of pulmonary œdema). Ortner says digitalis is contraindicated, "on account of its toxic effect on the heart." Apply artificial respiration, if necessary (see Asphyxia). Continue it as long as the heart beats, for days, if necessary.

For pain, and for the relief of excessive vomiting, give morphine hypodermically. Orthoform, cocaine, and chloretone are also recommended for pain. (For drugs see Part 11).

No food should be allowed for at least twenty-four hours; then concentrated liquid nourishment should be administered.

For persistent diarrhœa prescribe bismuth and opium.

Water should be taken freely, best in the form of cream of tartar lemonade (*q.v.*), in order to dilute and to hasten elimination of the poison through the kidneys.

TABLE OF POISONS AND POISONING.

Poison	Symptoms	Treatment (Consult also what precedes; and for dosage, Part 11)
Acetanilid	Soft, weak pulse, lowered temperature, cyanosis, sweating, collapse, methæmoglobinæmia and -uria	Head lowered; heat; stimulants: strychnine, atropine; oxygen; sod. bicarb.; artificial respiration.
Acid, Acetic (Vinegar)	Gastro-enteritis; vomiting and purging	Alkalies: sod. bicarb. or carb., soap solution, chalk, magnesia; warm water, milk, flaxseed tea, oil.
Acid, Carbolic	White eschar in mouth; carbolic odor of breath, vomiting and purging, burning pain, collapse, dyspnœa, coma, sometimes convulsions, urine smoky or black on standing.	Epsom or Glauber salts (sulphates), tablespoonful to a pint of milk, or 20 grs. every 2 hours until out of danger; alcohol, 1 : 4 of water, or whiskey or brandy; lavage with dilute whiskey or 20 per cent. alcohol; demulcent drinks (see under Poisoning), no oils; stimulants: strychnine, digitalis; hot applications.
Acid, Chromic	Yellow stain; vomiting, purging, pain, often cramps in the legs, collapse	Demulcent drinks (see under Poisoning), chalk, lime-water, magnesia, lavage.
Acid, Hydrochloric	White stain; violent gastro-enteritis; vomiting; purging, pain.	Alkalies and demulcents etc. (see under Poisoning).
Acid, Hydrocyanic	Odor of bitter almonds; cardiac and respiratory failure, disturbed cerebration, vomiting, convulsions, collapse.	Hydrogen peroxide or ferric chloride at once; sod. hyposulphite intravenously at once; patient on back with feet raised, ammonia by inhalation; open air; dashing of cold water on head and spine continuously; pot. permang. 0.3 per cent.; camphor and atropine injections; lavage; artificial respiration. The following may be kept on hand at reduction works: Ferrous sulphate, 23 per cent. sol., 1 oz. hermetically sealed; pot. hydroxide, 5 per cent. sol., 1 oz. hermetically sealed; powdered mag. oxide, gr. xxx; pint metal receptacle. Mix in receptacle with ½ pint of water and swallow at once. (Martin & O'Brien.)
Acid, Nitric	Deep yellow stain; violent gastro-enteritis	Alkalies and demulcents, etc. (see under Poisoning).
Acid, Oxalic (Pot. oxalate, salts of sorrel salts of lemon, polishing paste)	Pain, vomiting, cyanosis, cold skin, stupor, collapse, sometimes convulsions.	Chalk, lime, magnesia (no soda or potash); demulcents(see under Poisoning); stimulants; mag. sulphate as a cathartic.
Acid, Prussic	See Acid, Hydrocyanic	
Acid, Salicylic	Nausea, vomiting, dizziness, headache, sense of fullness in head, tinnitus, dilated pupils, delirium, deafness, dimness of vision, erythematous and other rashes, epistaxis and other hemorrhages, diaphoresis, heart and respiratory depression, low blood pressure	Lavage; sodium bicarbonate in large doses.
Acid, Sulphuric (Oil of Vitriol)	Black stain, pain, vomiting, swelling of parotid glands, suppression of voice, salivation, collapse	Alkalies and demulcents, etc. (see under Poisoning).
Acid, Tartaric	Gastro-enteritis	Alkalies and demulcents, etc. (see under Poisoning).
Aconite (Monkshood)	General tingling sensation, feeling of chilliness and general weakness, surface anæsthesia, sense of constriction in the fauces, salivation, pulse slow, weak and intermittent, fall of blood pressure and temperature; dilatation of pupils; respiration shallow, slow; moist, cold skin	Atropine (best antidote) digitalin; ammonia; prone position, head lowered, absolute quiet; external heat; give tannic acid (see under Poisoning); no emetics; artificial respiration.
Alcohol (Ethyl)	General relaxation, anæsthesia, stupor or coma, lowered temperature; face pallid; moist, cool skin, pulse rapid and weak; breathing somewhat stertorous, sometimes convulsions	Lavage, external heat, atropine, caffeine, strychnine.
Alcohol (Methyl)	Same as above, with more or less loss of vision by the third or fourth day	Same as above; pilocarpine, gr. ⅛.
Alkalies	Staining of mucous membrane; gastro-enteritis	See under Poisoning.

TABLE OF POISONS AND POISONING—*Continued*

Poison	Symptoms	Treatment
Almond, Bitter	See Acid, Hydrocyanic.	
Ammonia	Gastro-enteritis, pain, bloody purging, swelling of bronchial tubes with suffocation, convulsions	See under Poisoning; œdema of glottis may demand tracheotomy (*q.v.*).
Amyl Nitrite	Respiratory and cardiac failure	Head lowered; artificial respiration.
Anilin	See acetanilid.	
Antimony	Slow weak pulse, moist skin, soon followed by severe gastro-enteritis and collapse; symptoms resemble those of Asiatic Cholera	Tannic acid, egg albumen, etc. (see under Poisoning), followed by lavage; later magnesium carbonate; patient prone with head low, external heat; stimulation, digitalis.
Antipyrine	Sweating, cyanosis, vertigo, faintness, tinnitus, lowered blood pressure and temperature, chilliness, nausea, vomiting, rash resembling measles, respiratory failure; methæmoglobinæmia and -uria	Head low, external heat, stimulants: strychnine, atropine; oxygen; sod. bicarb.; artificial respiration.
Apomorphine	Severe vomiting, delirium, sensory and motor paralysis, cardiac and respiratory depression	Stimulants: strychnine, digitalin, atropine in small doses.
Arsenic	Burning pain, sense of constriction in the throat, metallic taste in mouth, salivation, vomiting and purging, thirst, odor of garlic on breath, pulse and respiration rapid, suppression of urine, swelling of face, collapse, convulsions, paralysis, skin eruption in protracted cases	Ferri hydroxidum cum magnesii oxido (Part 11), 1 oz. or more every 15 min. until acute symptoms and purging cease, then every half to one hour, followed by castor oil; demulcents; external heat; stimulants; opium (see Part 11); copious draughts of water and saline infusions; emesis, lavage. (For chronic poisoning, see Arsenical Poisoning.)
Atropine	Flushed face and neck, dilated pupils, dry mouth, throat and skin; rapid heart, low blood pressure; rapid breathing, delirium, motor activity, mental excitement, tremor, husky phonation, difficulty in swallowing; later stupor, slow heart and respiration; convulsions, coma, paralysis, retention of urine. Instil urine in eye of dog and note effect on pupil	Tannic acid; Lugol's solution, ℥i to gr. i of atropine; lavage (see under Dyspepsia); pilocarpine, morphine, physostigmine; external heat; caffeine, camphor, strychnine (for respiratory depression), mustard poultices; catheterization for vesical paralysis; artificial respiration.
Barium Salts	Gastro-enteritis	Sulphates, followed by lavage; emetics (see under Poisoning); external heat, stimulants, morphine for pain.
Belladonna	See Atropine.	
Bitter Almonds	See Acid, Hydrocyanic.	
Bloodroot (Sanguinaria)	Gastro-enteritis, salivation, thirst, vertigo, faintness, disordered vision, dilated pupils, muscular weakness, coldness, slow pulse, convulsions	Emesis (see under Poisoning), lavage stimulation; strychnine, atropine, digitalis; external heat.
Bromine	Palatal and pharyngeal anæsthesia with loss of gagging; lowered temperature and blood pressure; drowsiness, stupor; rapid, feeble heart, pallor, reflexes impaired	Alkalies, egg albumen, starch, followed at once by lavage. Steam inhalation if bromine vapor has been inhaled.
Buttercup	Gastro-enteritis	Lavage; treat symptoms.
Caffeine	Sense of heaviness in head, flashes of light before eyes, tinnitus, vertigo, headache, mental confusion, nausea, faintness, numbness, thirst, tremor, restlessness, exaggerated reflexes; rapid, irregular heart, palpitation due to extra-systoles, elevation of temperature, insomnia, collapse	Emetics (see under Poisoning); external heat, atropine, morphine.
Calabar Bean (Physostigma)	Giddiness, muscular tremors, muscular relaxation and paralysis, loss of reflexes; pupils contracted, nausea, sometimes vomiting and purging, colic, salivation; respiration slow and irregular, bradycardia, sweating	Lavage; atropine and strychnine (best physiologic antidotes); external heat; stimulants; artificial respiration.
Calcium (Slaked lime)	Gastro-enteritis	Lavage; demulcents (see under Poisoning); stimulants; external heat.

TABLE OF POISONS AND POISONING—*Continued*

Poison	Symptoms	Treatment
Camphor	Burning pain, gastro-enteritis, odor of camphor, languor, headache, mental confusion, vertigo, dimness of vision, cyanosis, delirium, convulsions; rapid, weak pulse, collapse	Emetics (see under Poisoning), heat, stimulants, alcohol
Cannabis Indica (Indian Hemp)	Sensation of enormous dimensions, prolongation of time, and double consciousness, exhilaration, later drowsiness, anæsthesia, lowered reflexes, weakness, dilated pupils, rapid pulse, slow breathing, catalepsy, coma, sometimes convulsions	Stimulation; atropine; artificial respiration.
Cantharides (Spanish Flies)	Gastro-enteritis, salivation, swelling of the submaxillary glands, burning sensation and sense of constriction of throat; burning pain in back, bladder, and urethra, priapism, strangury, scanty bloody urine, stupor, coma, sometimes delirium and convulsions	Lavage; demulcents (see under Poisoning); no oil; opium for pain and irritation; alkalies to alkalinize urine, which combats the action of cantharides.
Carbolic Acid	See Acid, Carbolic.	
Carbon Bisulphide	Multiform nervous and mental symptoms in chronic poisoning. Sources: rubber industries, chemical use	Elimination: purgation, diuresis, diaphoresis, fresh air exercise. Prophylaxis: thorough ventilation, use of rubber gloves. Early cases usually recover.
Carbon Dioxide	Vertigo, headache, cyanosis, somnolence, coma	Oxygen, artificial respiration; counter-irritation; electricity.
Carbon Monoxide. Sources: Electric furnaces, illuminating gas; combustion products from stoves, oil stoves, furnaces, kilns, etc., blasting in mines	Headache, muscular weakness, often nausea and vomiting, sometimes unconscious, often muscular twitching, sometimes convulsions; blood of a cherry-red color, which forms a bright red clotted mass on the addition of sod. hydrate of about 1.30 s.g. (normal blood forms a mucoid-like mass of greenish-brown color). Sequelæ: weakness, fever, bronchitis, broncho-pneumonia, localized hyperæmias; palpitations, gastro-intestinal disturbance, transient glycosuria, skin lesions, nervous and mental symptoms of all kinds	Oxygen; venesection (1 to 1½ pints of blood removed) and normal saline (Oii) infusion; stimulation: strychnine, etc.; external heat; artificial respiration (see Asphyxia).
Castor Oil Beans	Vomiting, purging, collapse	Demulcents (see under Poisoning); external heat; stimulants.
Chenopodium	See Oil of Chenopodium.	
Chloral	Muscular relaxation, somnolence, coma; respiration slow and shallow; pulse slow, then rapid and thready; face livid and clammy; temperature lowered; pupils contracted, later dilated; loss of reflexes	Emetics (no apomorphine); lavage (see under Dyspepsia); patient prone with lowered head; keep patient aroused by slapping with wet towels; oxygen, dry heat; stimulants: strychnine, atropine, digitalin, caffeine, ammonia; artifical respiration.
Chlorine	Respiratory irritation; broncho-pneumonia	Steam inhalations.
Chloroform	Respiration stertorous, irregular, shallow; pupils dilated; face livid; pulse slowed and weak	Lower head; stimulate with alternate hot and cold douches, strychnine, atropine, digitalin, electricity, artificial respiration.
Chromic Acid	See Acid, Chromic.	
Cocaine	Pallor, or cyanosis, dizziness, nervousness, faintness, small rapid pulse, slow respiration, dilated pupils; prostration	If swallowed: tannic acid (see under Poisoning); lavage; lower head; stimulants; amyl nitrite; artificial respiration; oxygen. If injected: tie part tightly to prevent further absorption. (For cocainism, see Cocainism.)
Codeine	See Opium.	
Colchicum	Gastro-enteritis, pain, vomiting, purging; pulse rapid, later slow, prostration, convulsions, collapse; ascending paralysis	Emetics or lavage, followed by cathartics; tannic acid; demulcents (see under Poisoning); warm water freely and normal saline solution to promote elimination through the kidneys (see under Poisoning).

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TABLE OF POISONS AND POISONING—*Continued*

Poison	Symptoms	Treatment
Conium (Hemlock)	Vertigo, disturbed vision, muscular relaxation; nausea, vomiting, dilated pupils, ptosis, frontal headache; pulse slow, later rapid	Tannic acid and lavage (see under Poisoning); external heat, stimulants: strychnine, atropine, caffeine, digitalin; artificial respiration.
Copper	Burning pain, nausea, vomiting, metallic taste in mouth; gastro-enteritis, salivation; bronchial secretions increased; convulsions, delirium, oliguria, fever, rapid respiration, cardiac depression	Potassium ferrocyanide (in small doses) is chemical antidote; demulcents (see under Poisoning); lavage; morphine for pain.
Corrosive Sublimate	See Mercury.	
Creosote	See Acid, Carbolic.	
Croton Oil	Gastro-enteritis	Demulcents (see under Poisoning); stimulants; opium.
Cyanides	See Acid, Hydrocyanic.	
Digitalis (Fox Glove)	Nausea, vomiting, headache; disordered vision, vertigo, faintness, slow bigeminal pulse, later delirium cordis; falling blood pressure; lowered temperature; restlessness; hallucinations; delirium; suppression of urine; stupor; convulsions; coma	Tannic acid or Lugol's solution, followed by emetics (see under Poisoning), unless the heart is very weak, or lavage; nitroglycerine; patient horizontal and absolutely quiet; external heat; opium.
Ergot	Nausea, vomiting, diarrhœa, vertigo, headache, tingling of fingers, cramps, pupils dilated, pulse small and feeble, fall of temperature; retention of urine due to contraction of vesical spincter; convulsions; miscarriage in pregnant women	Lavage; castor oil; nitroglycerine, alcohol; external heat.
Ether	Slow stertorous respiration; rapid heart; cyanosis; fall of temperature; dropping of jaw	Lower head; strychnine, atropine, digitalin; external heat; friction, artificial respiration.
Fish Berries	See Picrotoxin.	
Fly Paper	See Arsenic.	
Food Poisoning	Vomiting, diarrhœa, colic, headache, chilliness, muscular weakness, etc.	See under Poisoning.
Formalin (Formaldehyde Solution)	Pain, vomiting, odor of formaldehyde, cardiac depression	Diluted ammonia (a few drops in water), or aromatic spirits of ammonia, or liquor ammoniæ acetatis; hot bath; emetics (see under Poisoning).
Gelsemium (Yellow Jasmine)	Heaviness and drooping of the eyelids; dropping of jaw; languor, drowsiness, vertigo, diplopia, dilated pupils, muscular relaxation; slow, feeble heart; slow respiration; anæsthesia; diaphoresis; loss of voice; fall of temperature	Stimulation: ammonia, digitalin, atropine, strychnine; external heat; tannic acid; emetics; lavage (see under Poisoning).
Hemlock	See Conium.	
Henbane	See Atropine.	
Hydrochloric Acid	See Acid, Hydrochloric.	
Hydrocyanic Acid	See Acid, Hydrocyanic.	
Hyoscyamus (Hyoscine)	See Atropine.	
Insect Powder	See Arsenic.	
Iodine (Iodides)	Gastro-enteritis; metallic taste in mouth; salivation, swelling of salivary glands, eyelids, larynx; pallor; rapid, feeble pulse; thirst; fever; cyanosis; suppression of urine; excitement, convulsions, collapse	Starch (flour, arrowroot, etc.), boiled in water and given freely; emetics (see under Poisoning); lavage; external heat; atropine, strychnine, alcohol, digitalin, ammonia.
Iodoform	Headache; nausea, vomiting; restlessness; fever; mental depression; rapid, feeble pulse; insanity; collapse	Lavage; symptomatic treatment.
Jaborandi (Pilocarpine)	Cardiac and respiratory depression; pallor; weakness; sweating; giddiness; salivation; tremor; drowsiness; chilliness; colic; myosis; pain in eyeball; pulmonary œdema; vomiting, purging	Tannic acid; emetics, lavage (see under Poisoning); atropine.
Jasmine, Yellow	See Gelsemium.	
Jimson Weed	See Atropine.	

TABLE OF POISONS AND POISONING.—*Continued*

Poison	Symptoms	Treatment
Lead	Sweet metallic taste in mouth; pain; gastro-enteritis; sometimes constipation; pulse rapid and tense, later weak and relaxed; thirst, cramps in legs; muscular twitching; vertigo; anæsthesia, later paralysis; collapse, coma, convulsions	Sod. or mag. sulphate, 1 oz.; dilute HCl, teaspoonful well diluted; sod. chloride; emetics; lavage; demulcents; external heat. (See under Poisoning). For chronic poisoning, see Lead Poisoning.
Lime	See Calcium.	
Lobelia	Vomiting, purging; fall of temperature; feeble heart action; muscular weakness; muscular tremblings, collapse; convulsions, stupor, coma	Tannic acid; emetics; lavage (see under Poisoning); external heat; stimulants: strychnine, digitalin, ammonia.
Matches	See Phosphorus.	
Mercuric Chloride	Gastro-enteritis, vomiting, purging; metallic taste in mouth; pain; collapse; convulsions, coma. Late symptoms: salivation, nephritis, multiple neuritis (For chronic poisoning, see Mercury Poisoning).	Emetic at once: apomorphine; white of egg to each 4 grs. of poison (more albumen causes solution of mercury albuminate), followed by repeated gastric and colonic lavage, since mercury is excreted in the stomach and intestine. External heat; stimulants. Induce sweating by means of hot packs. Give sod. bicarb. liberally and also glucose in a 10 to 50 per cent. solution. Later, to prevent nephritis, copious water drinking or saline solution (0.8 per cent), 1 quart daily hypodermically.
Morphine	See Opium.	
Mushrooms	Pain, nausea, vomiting, purging	Tannic acid (see under Poisoning), followed by apomorphine, or lavage. For Amanita muscaria, atropine gr. $\frac{1}{50}$; for A. phalloides, saline or fresh blood transfusion (*q.v.*); stimulants; opium for pain.
Nicotine	See Tobacco.	
Nightshade	See Atropine.	
Nitric Acid	See Acid, Nitric.	
Nitrite of Amyl	Muscular relaxation, pallor, nausea, vomiting; fainting; dilated pupils; pulse slow and almost imperceptible; respiration irregular, collapse; methæmoglobinæmia	Stimulants: strychnine, digitalin; alternate hot and cold douches; artificial respiration.
Nitrite of Potassium or of Sodium	See Nitrite of Amyl.	
Nitrobenzene or Nitrobenzol (Artificial oil of bitter almonds)	Pallor, cyanosis; dizziness; weak, rapid pulse, subnormal temperature; irregular respiration; coma; odor of bitter almonds in breath and urine	Lavage; respiratory and cardiac stimulation, but no alcohol; external heat.
Nitroglycerine	Flushing, headache, giddiness, palpitation, buzzing in the ears; irregular pulse, pupils dilated; precordial pain; weakness; urine scanty; sometimes vomiting, sometimes loss of consciousness	Stimulants: atropine, strychnine, digitalin; ice-cap to head.
Nux Vomica	See Strychnine.	
Oil of Bitter Almonds	See Acid, Hydrocyanic.	
Oil of Chenopodium	Drowsiness and depression	Saline cathartics; hot coffee, or caffeine.
Opium	Stupor; pupils contracted; pulse slow and strong; breathing full; later coma, cyanosis, respiration slow, irregular and shallow, pulse rapid and weak; cold, clammy skin.	Tannic acid; emetics; lavage with pot. permanganate 1:1000 every hour (light pink sol.), leaving a little in each time (morphine is excreted in the stomach and is oxidized by the permanganate); wash out bowels also; purge; strong coffee by mouth or rectum; strychnine, gr. $\frac{1}{20}$ to $\frac{1}{10}$; atropine, gr. $\frac{1}{50}$ (more than this is depressant); artificial respiration, when respirations fall to 8 to 10 per minute (continue as long as heart beats, for days if necessary); catheterize the bladder.

TABLE OF POISONS AND POISONING—*Continued*

Poison	Symptoms	Treatment
Oxalic Acid	See Acid, Oxalic.	
Paris Green	See Arsenic.	
Phenacetine	See Acetanilid.	
Phosphorus	Garlicky breath and eructations; pain and burning in stomach; then period of rest for 2 to 3 days, followed by vomiting and purging, vomitus and stools luminous in the dark; often constipation; jaundice; delirium; headache; vertigo; twitchings, convulsions; scanty urine; coma. Fatty degeneration of organs and tissues occurs	Copper sulphate, gr. v, every 5 min. until vomiting occurs, or stomach tube is ready (chemical antidote and emetic); lavage with pot. permanganate 1 : 1000; later mag. sulphate (no oils); hyd. peroxide, 1 to 3 per cent.; alkalies as in acidosis (*q.v.*).
Physostigma	See Calabar Bean.	
Picrotoxin	Nausea, salivation; dizziness; drowsiness; perhaps stupor and convulsions; collapse	Lavage; stimulants.
Pilocarpine	See Jaborandi.	
Poke Berry	See Picrotoxin.	
Potassium Bichromate	Mouth and lips stained yellow; gastroenteritis	Emetics (see under Poisoning); lavage; mag. carbonate or chalk; egg albumen; external heat; stimulants.
Potassium Chlorate	Albuminuria; nephritis; suppression of urine; heart depression; cyanosis; drowsiness	Lavage; copious water drinking and infusions; stimulants; external heat.
Prussic Acid	See Acid, Hydrocyanic.	
Quinine	Deafness; blindness; transient erythemas; epistaxis; headache; delirium; coma	Tannic acid (see under Poisoning); stimulants: alcohol, strong coffee, ammonia; artificial respiration.
Ratsbane	See Phosphorus.	
Resorcin	Cardiac and respiratory depression; diaphoresis; narcosis; collapse	See Acid, Carbolic.
Rough on Rats	See Arsenic.	
Salicylic Acid	See Acid, Salicylic.	
Salol	See Acid, Carbolic.	
Sanguinaria	See Bloodroot.	
Savin	Pain; vomiting; purging; convulsions; collapse; coma; nephritis; abortion	Apomorphine or lavage; castor-oil; demulcents (see under Poisoning); stimulants; abdominal poultices; morphine for excessive vomiting and purging.
Scheele's Green	See Arsenic.	
Scopolamin(Hyoscine)	See Atropine.	
Silver	Pain; diarrhœa; vomiting of white, cheesy matter, which turns black in sunlight; dizziness; convulsions; coma; paralysis	Salt water; milk and egg albumen in large amounts; washing soda (sod. carb.); soap; sulphates; lavage.
Squills	Vomiting; purging; strangury; hæmaturia; paralysis; convulsions.	
Stramonium (Jamestown or Jimson Weed)	See Atropine.	
Strophanthus	See Digitalis.	
Strychnine (Nux vomica)	Muscular twitching; slight vertigo; muscular stiffness; restlessness; trembling; stiffness of back of neck; tetanic convulsions; opisthotonos; risus sardonicus; complete relaxation between convulsions; retention of consciousness; painful muscular contractions; a slight touch or breath of air originates convulsions	Absolute quiet, avoidance of noises, draughts, etc.; tannic acid, followed at once by lavage, best with pot. permanganate, 1 : 1000; Lugol's sol.; amyl nitrite; physostigmine; alcohol; for convulsions: chloroform by inhalation, and bromide and chloral per rectum; diuresis to eliminate poison; oxygen; artificial respiration.
Sulphonal	Ptosis; vomiting; diarrhœa or constipation; vertigo; oliguria; paralysis; hæmoglobinuria; hæmatoporphyrinuria; stupor; papular skin eruptions	Alkalies: sod. bicarb. or mag. carbonate, later mag. sulphate; croton oil, gtt. ii, followed by a high turpentine enema; water freely by mouth and by infusion.
Sulphuric Acid	See Acid, Sulphuric.	
Tansy	Abdominal pain; vomiting; unconsciousness, convulsions	Lavage; cardiac stimulation.

TABLE OF POISONS AND POISONING—*Continued*

Poison	Symptoms	Treatment
Tartar Emetic	See Antimony.	
Tartaric Acid	See Acid, Tartaric.	
Thorn Apple	See Atropine.	
Thymol	Weakness; collapse; albuminuria; hæmaturia	Gastric and colonic lavage; saline cathartics (no oil or alcohol); heat; black coffee; hypodermic of atropine, strychnine, and pituitrin.
Tobacco (Nicotine)	Prostration; giddiness; collapse; dyspnœa; muscular tremblings, sometimes convulsions	Tannic acid, followed by immediate lavage; head low; stimulants: atropine, strychnine, Hoffmann's anodyne; external heat.
Trional	See Sulphonal.	
Turpentine	Gastro-enteritis; vomiting; diarrhœa; lumbar pain; dysuria; strangury; hæmaturia; suppression of urine; odor of violets in the urine; pupils dilated; muscular weakness; incoördination; narcosis; cyanosis; feeble, rapid pulse.	Sulphates, especially mag. sulphate; demulcents (see under Poisoning); opium.
Veratrum	Small, rapid pulse (at first slow); skin cold and clammy; vomiting; purging; giddiness; faintness; impaired vision; great weakness; respirations slowed; collapse; stupor; often convulsions	Tannic acid (see under Poisoning), followed immediately by lavage; patient prone, head low, absolute quiet; alcohol, morphine; stimulants: atropine, strychnine; external heat; amyl nitrite.
Veronal	Abdominal pain; sweating; pyrexia; neuralgia; nausea; vomiting; oliguria; glycosuria; erythema; ataxia; somnolence deepening to coma	See Sulphonal.
Wormseed	See oil of chenopodium.	
Zinc	Pain, gastro-enteritis; nausea; vomiting; collapse.	Demulcents, emetics (see under Poisoning); lavage.

II. Insect and Snake Poisoning.—Apply a ligature above the bitten part, open the wound thoroughly, and suck with the mouth or with cupping glasses (*q.v.*). Inject into the wound and the surrounding tissues 20 to 30 c.c. of a fresh solution of 1 per cent. calcium or gold chloride, or calcium hypochlorite; or pot. permanganate, 1 : 100; or chromic acid 1 : 100; or rub in crystals of pot. permanganate. The wound may be excised.

Administer antivenin, if available; preferably an antivenin which is specific for the species of snake which caused the bite; otherwise a polyvalent antivenin. Rattlesnake antivenin (anticrotalus serum) and mocassin antivenin are obtainable from the Rockefeller Institute in New York. "Cobra and daboia antivenins are furnished in India, Notechis antivenin in Australia, and Lachesis antivenin in Brazil and Japan" (Blumer). Give large doses, 50 to 100 c.c. in serious cases, intravenously (*q.v.*) if possible, otherwise intramuscularly. Gastric lavage is recommended, since the poison is partly excreted in the stomach. Intravenous or subcutaneous infusions of normal saline solution (0.9 per cent.) and large amounts of cream of Tartar lemonade (*q.v.*, in Part 11) by mouth serve to dilute the poison and favor elimination. If stimulants are required, employ alcohol, coffee, tea, ammonia, strychnine, atropine (Part 11). Müller employs strychnine as an antidote: gr. $\frac{1}{6}$ every half-hour "until slight tetanic convulsions appear." Resort to prolonged artificial respiration when necessary, for the patient may at any time suddenly recover. Continue artificial respiration as long as the heart beats.

The bites of poisonous spiders, scorpions, and the Gila monster are treated in the same manner as snake bites.

Poliomyelitis, Acute; Acute Infantile Paralysis.—Gr. πολιός gray + μυελός marrow + ιτις inflammation. An acute infectious, sporadic and epidemic disease usually of children, involving particularly the gray matter of the spinal cord and brain stem, and characterized clinically by an incubation period of from five to ten or twelve days, followed abruptly by fever, pain, especially marked on handling the limbs, and an atrophic, flaccid paralysis or paresis of various muscles, usually of the limbs, which soon slowly disappears in some of the muscles, while remaining permanent, as a rule, in the others. The acute stage of the disease usually lasts from five to ten days. It is most prevalent in the warm months. The mortality is low. The cause is possibly

LAROUSSE MÉDICAL

Poisonous mushrooms, edible ones ressembling them.

Fatal (F); Dangerously poisonous (P); Edible (E).

a filterable globoid organism (Flexner and Noguchi) or a pleomorphic streptococcus (Rosenow). It is probably transmitted by way of the naso-pharyngeal secretions of carriers; it is possible that the biting stable fly, the common house fly, and bed-bugs may transmit the disease. The so-called "distemper" of dogs and horses may be the same affection. According to Flexner and Amoss, the virus is present in the nasopharynx during the first week of the disease, usually not later.

The meninges are sometimes chiefly involved, with resulting meningeal symptoms. Multiple neuritis and Landry's paralysis are sometimes simulated. The muscles of respiration may even become involved, in severe cases, with resulting death.

The deep reflexes of the affected limbs are abolished; but there is no loss of sensation.

Says E. F. Buzzard: "A febrile disturbance associated with a painful condition of the limbs, especially evoked by handling, and with a pseudo-paralysis, is produced by rickets, scurvy rickets, syphilitic epiphysitis, osteomyelitis, and rheumatic fever, and must be differentiated from acute poliomyelitis."

The reaction of degeneration occurs in the seriously affected muscles in eight to ten days. It is indicated by lack of response to the faradic current and a slow response to the galvanic current, the anodic closing contraction being better than the cathodic closing contraction. A paralyzed muscle which retains its faradic excitability may be expected to recover.

Improvement in the paralysis does not begin until from one to three weeks after the acute symptoms have subsided, and is indicated by a quickened response to the galvanic current. Much of the paralysis disappears within six months; but spontaneous improvement may continue for even two years or longer.

Treatment.—Isolate the patient, and exclude flies; keep the nose and mouth clean, and destroy the nasal, buccal, and intestinal discharges; and instruct the attendants to use a prophylactic menthol spray (Part 11) for their noses and throats (see Disinfection, for details). Contacts should be quarantined for fourteen days, the patient for twenty-one days, and he should be free, too, from all nasal, aural, or other discharges.

Enjoin complete rest in bed, on light diet, consisting of milk and cereal gruels, with plenty of water, preferably in the form of cream of tartar lemonade (one teaspoonful to the pint or quart of boiling water; cooled, and flavored with lemon and sugar). Open the bowels with calomel or castor oil. The following old-fashioned fever mixture can do no harm:

℞ Spiritus ætheris nitrosi ..... ℥ii (♏v per teaspoonful)
Potassii citratis... ℥i (gr. iiss per teaspoonful)
Liquoris ammonii acetatis ..... ℥iss (℥ss per teaspoonful)
Syrupi simplicis... ℥i
Aquæ camphoræ, q.s. ad ..... ℥iv

M. Sig.—One teaspoonful (for three-year-olds) to one tablespoonful (for adults) every three hours.

Urotropin is recommended as a spinal antiseptic, but it is said to liberate fomaldehyde only in an acid medium. (For all drugs, see Part 11).

During the first week, one may apply counter-irritation to the spine in the form of mustard poultices (*q.v.*), once every three hours, or frequent dry cups (*q.v.*), or the Paquelin cautery, or tincture of iodine, or the ice-bag, if well borne. Envelop the affected limbs in cotton wool; and in order to prevent contractures, splint them in a straight or slightly flexed position. The lower limbs should be in line with the body, and the feet at right angles with the legs.

The occurrence of urinary retention may demand catheterization.

After the acute stage has subsided, and all traces of pain and muscle soreness have disappeared (four weeks to three months), get the patient on his feet, and begin manual or vibratory massage (rubbing, pinching, kneading and hacking), passive and active movements (the latter are the best), and electrical stimulation of the paralyzed muscles.

Each muscle or muscle group in the body (both arms, both legs, back, abdomen, and neck) must be tested and a note made of those which are normal and those which are weak. The weak muscles should be accurately trained and strengthened by systematic exercises, strictly avoiding fatigue. Be careful to see that the weak muscles are used in any prescribed movement, and not the strong ones, which would increase the muscular imbalance, with resulting deformity.

For abdominal weakening, employ a supporting cloth corset. In deltoid weakening, elevate the arm to shoulder level (after Lovett).

In the passive stretching exercises, move the limbs to their normal limits in all directions. Employ these measures at first but once every three days, and later increase the work most carefully to, say, half an hour, two or three times daily, for the purpose of maintaining the muscles in healthy tone until their

nerves have regenerated, and for the prevention of contractures. In infants, a bell or rattle may be tied to the paralyzed limb. Electricity (*q.v.*) is of the least importance. Employ the least strength of current required to produce a muscular contraction. Devote about three minutes, 50 to 60 interruptions to the minute, to each muscle, the cathode being applied to the muscle. Use galvanism for those muscles which do not respond to the faradic current, faradism for those muscles which do respond. In the use of massage and exercises, avoid, above all things, fatigue, which is very detrimental to the return of power. If the muscles are exercised every day in the beginning, even though very gently, their power will diminish or disappear (Lovett and Martin.)

For the purpose of producing active hyperæmia, subject the limb for twenty to thirty minutes, three or four times a week, to dry heat, a hot pack or fomentation, a hot sand bake, the electric light bath, or forcible sprays of water at various temperatures.

Continue the above measures for several years, if necessary.

Prescribe tonics if required, *e.g.*, iron, strychnine, arsenic (see Part 11). Daily warm baths, fresh air, and good food are important.

As soon as the patient is able, he may be allowed to walk with the limb supported by a brace (best, a celluloid splint), in order to prevent deformity, such as talipes, genu recurvatum, etc. (see Fig. 64), but very little walking is advisable during the first year.

The foot is held at right angles with the leg in order to prevent equinus (the result of paralysis of the anterior leg muscles), or calcaneus (the result of paralysis of the calf muscles). The knee is supported to prevent genu recurvatum. There should be no joint at the knee in young children, but in older patients a joint is supplied which permits of flexion only on sitting. In paralysis of the hip muscles a pelvic band is required. The brace should be changed as it is outgrown. The foregoing measures should be continued throughout the growing period of childhood.

After the tenth to fourteenth year, if residual incurable paralyses remain, and deformity has been prevented or corrected, tendon transplantation may be considered (see orthopædic textbooks). Late secondary flexion deformities should be straightened out, tenotomy being performed if necessary (see Whitman's " reverse leverage " method of correcting flexion of the leg, in Tuberculosis of the Knee, in Part 10, Orthopædics). Thigh flexion is corrected by forcible extension, with the pelvis fixed by flexion of the sound thigh and leg upon the abdomen, tenotomy being performed if necessary. Says C. F. Painter, " Tenotomy of a long contracted muscle effects an improvement in its tone and muscular power." After correction, or over correction, the limb is

Fig. 64. Apparatus for paralysis.

fixed in plaster. Arthrodesis (artificial ankylosis, designed to stiffen flail joints) should not be done under eight years of age. Osteotomy is sometimes indicated (see, in Part 10, Orthopædics, Talipes, Scoliosis, and Knock-Knee). For paralytic dislocations, see Dislocations, Paralytic (in Orthopædics).

Poliomyelitis, Chronic Anterior.—See Atrophies, the Progressive Muscular.

Polycythæmia Vera; Erythræmia.—Gr. πολύς many + κύτος cell + αἷμα blood; L. *vera*, true; Gr. ἐρυθρός red + αἷμα blood. A very rare, chronic disease, characterized by a marked increase in the amount of blood, especially the red blood cells and hæmoglobin, associated with splenomegaly, with resulting general vascular congestion, high blood pressure (*q.v.*), flushing, perhaps cyanosis, headache, giddiness, dyspnœa, muscular and mental weakness, and a tendency to hemorrhage from the skin and mucous membranes, to cardiac failure, and recurring ascites or pulmonary œdema.

Exclude other causes of cyanosis (*q.v.*).

Treatment—The X-rays may be applied both to the spleen and to the long bones, in order to diminish, if possible, erythroblastic hyperactivity (see under Lukæmia). "Splenectomy should not be performed." (Osler). Hirschfeld advises the iodides. Benzol, which causes a fall in the red blood count, may be given a trial (see under Leukæmia).

Low diet, saline purgation, and occasional bleedings are of benefit.

The condition is perhaps incurable, but the patient may live for about six to eight years.

Polymorphonuclear Neutrophiliosis.—Gr. πολύς many + μορφή form + L. *nu'cleus;* L. *neu'ter*, neither + Gr. φιλεῖν to love. See Leucocytosis.

Polymyositis.—Gr. πολύς many + μῦς muscle + -ιτις inflammation. See Myositis.

Polyneuritis.—See Neuritis, Multiple.

Polyphagia.—See Bulimia.

Polyuria.—Gr. πολύς much or many + οὖρον urine.

I. Increased Amount (*i.e.* more than about 2500 c.c. in twenty-four hours).

Causes.—Copious liquid drinking; diuretics; fright; anxiety in regard to studies, examinations, etc.; convalescence from fevers (epicritic polyuria); neurasthenia; hysteria; epilepsy; chorea; convalescent stage of acute nephritis; chronic nephritis, both interstitial and parenchymatous; arteriosclerosis of the kidney; amyloid kidney; chronic pyelonephritis; intermittent hydronephrosis; continuous catheter drainage in prostatic obstruction; essential phosphaturia; diabetes insipidis; diabetes mellitus; absorption of dropsical effusions; exophthalmic goitre; acromegaly; occasionally acute cerebrospinal meningitis; sometimes tuberculosis.

II. Increased Frequency (*i.e.* oftener than about five times in twenty-four hours).

Causes.—Increased amount of urine; cystitis (urgency present both day and night); vesical stone or foreign body; kidney stone; pyelonephritis; posterior urethritis (urgency present both day and night); vesicourethral fissure; vesical tumors; prostatic hypertrophy (nocturnal frequency); distended colon; urethral eversion; urethral caruncle; pelvic inflammation; hemorrhoids; anal fissure; irritable rectal ulcer; oxyuriasis; vaginismus; excessive coition or masturbation; neuroses of the bladder (frequency only during the day); neurasthenia; hysteria; locomotor ataxia; general paresis; myelitis; multiple sclerosis; cord tumors; spondylitis; overwork and anæmia; paralysis of the bladder; malaria; cold; acute fevers; visceroptosis, pregnancy; uterine displacements; uterine fibro-myomata; ovarian cystoma; tumor pressing upon the bladder; lithæmia; excessive acidity of the urine; pyuria; overconcentration of the urine (shown by the color and specific gravity); crystals in the urine (see Nephrolithiasis); irritating ingesta (ginger, radishes, spices, turpentine, cantharides, salicylates, quinine, etc.); contraction of the lumen of the bladder due to cystitis, stone, tumor, atrophy from disuse, operation upon the bladder; too high or too low specific gravity; abdominal pelvic operations; urethral stricture; urethral dilatation; enuresis of childhood continuing after puberty, in which the bladder has never held much urine. Consult Part 2, Gynæcology, and Part 3, Genito-Urinary Diseases.

Ponos; Infantile Kala Azar.—Gr. πόνος pain. A chronic endemic disease of young children, due to the Leishmania Infantum (possibly identical with the Leishmania Donovani; see Kala Azar), occurring in the islands of Spezzia and Hydra in the Ægean Sea, and characterized by sudden onset with indigestion and fever, followed by gradual painful enlargement of the spleen, emaciation, and eventually anasarca. Death usually occurs in from a few months to one or two years. The disease is probably transmitted by dogs and their fleas.

Treatment.—See Kala Azar.

Popliteal Nerve.—L. *poplitæ'us; po'ples*, ham. See Sacral Plexus.

Potato Poisoning.—See Poisoning.

Pott's Disease.—See Part 10, Orthopædics.

Posterior Tibial Nerve.—L. *poste'rius*, behind; L. *ti'bia*. See Sacral Plexus.

Post-Hemiplegic Chorea.—L. *post*, after; Gr. ἡμι— half + πλήγη stroke; χορεία dance. See Athetosis.

Premature Beats or Extra-Systoles. See Arrhythmia.

Premature and Delicate Infants.—Keep the infant warm, in a padded crib, wrapped in cotton, and surrounded by hot water bottles, or, better, lying upon the electric pad or electrotherm, which is placed between two or three thicknesses of blanket. Keep a thermometer between the bed clothing and the cotton, and see that it registers 85° to 95° F., according to the rectal temperature of the infant, taken every few hours, which should be kept at 98° to 100° F. Incubators have not proven satisfactory.

Administer breast milk, ¼ to ½ to 1 to 1½ ounces, every one to one and a half to two hours, 12 to 14 to 15 feedings in twenty-four hours. If too strong, dilute the milk with about an equal amount of 3 per cent. milk

sugar, or plain boiled water. If the child cannot nurse, employ gavage (see under Inanition, Simple Acute), or a medicine dropper, or the Breck feeder. Increase the amount and strength of the milk, and the intervals of feeding, as the child's strength and digestive ability increase.

Says Gerstley, if the amount of milk necessary for the baby's caloric needs is too bulky, overloading the stomach and causing vomiting, give boiled buttermilk with 5 per cent. dextri-maltose, but no more than one-third or one-half the total amount of breast milk taken, ascertained by weighing. To avoid anæmia and rickets, add, says Gerstley, a little calcium, codliver oil, and perhaps iron.

℞ Calcii lactatis..... ℥iss
Syrupi aurantii, q.s. ad..... ℥iv
M. Sig.—Two teaspoonfuls (about 6 gr. calc.) t.i.d.—Gerstley.

℞ Olei phosphori..... ℥ss
Olei morrhuæ..... ℥iv
M. Sig.—10 to 15 drops, slowly increased to 1 teaspoonful, t.i.d., after meals (before meals if the patient vomits.)—Gerstley.

℞ Ferri carbonatis saccharati.....gr. iii-iv
Mitte talis chartæ ceratæ.....No. 30
Sig.—A powder in a teaspoonful water, t.i.d. (for a baby of 4-5 months).—Gerstley.

Temporary inferior substitutes for human milk are:

1. Whey made from whole milk: To one quart of slightly acid milk add one teaspoonful of rennet; keep at a temperature of about 100° F. (38 C.) until the curd separates; then strain through cheesecloth after breaking up the curd. Boil three minutes. P., 0.8 per cent.; S., 4.5 per cent; Salts, 0.7 per cent.; no fat. About 7 calories per ounce.

2. Gravity cream, 1 oz.; milk sugar, 1 oz.; water, 15 oz. P., 0.3 per cent.; F., 1 per cent.; S., 5 per cent.

3. Canned sweetened condensed milk, 1 part; water, 24. P., 0.25 per cent.; F., 0.3 per cent.; S., 1.8 per cent. See also Infant Feeding.

For the first few weeks, use oil instead of water for cleansing the skin. The infant should be handled as little as possible. The oiling and change of cotton may be done every other day. A little cotton wool may be used instead of diapers.

Primary Combined Sclerosis.—See Combined System Diseases.

Lateral Sclerosis.—See Spastic Paralysis.

Proctitis and Sigmoiditis.—Gr. *πρωκτός* anus; *σιγμοειδής* like the letter *sigma* Σ; + *-ιτις* inflammation. **Symptomatology.**—Pain and discomfort in the pelvis, bladder, and thighs, tenesmus, and the frequent passage of small, thin, blood-stained, mucous stools. Examination with the speculum reveals an inflamed mucous membrane (see under Enteritis, for the manner of making an enteroscopic examination).

Etiology.—The prolonged use of irritating enemata (glycerine, nutrient enemata, etc.); long retained hardened scybala; sudden changes of temperature; sitting on something cold; traumatism; ulcerated hemorrhoids; rectal polyposis; pin-worms; gonorrhœa; chancroid; syphilis; tuberculosis; actinomycosis; bilharziasis; dysentery (amœbic, bacillary, etc.); diphtheria; typhoid fever; pyæmia; carcinoma.

Treatment.—Attend to the cause. In simple catarrhal inflammation, administer a large dose of castor oil, and irrigate the rectum or sigmoid (the latter in the knee-chest posture), once or twice daily with warm or cool normal saline (℥i ad Oi) or boric acid solution (℥i ad Oi). The inflamed surface may be sprayed or swabbed once or oftener with silver nitrate, gr. i–x to the ounce, or argyrol, 15 to 30 per cent. Touch ulcers with silver nitrate, gr. xx ad ℥i, or zinc chloride, ℥iss ad ℥i, or, in resistant cases, with nitric acid on a cotton swab. To relieve tenesmus, inject two ounces of thin starch solution containing 10 to 15 drops of laudanum, and press gently on the anus to prevent expulsion of the enema. In chronic cases, astringent injections may be useful, *e.g.*, tannic acid, gr. v–x–xx ad ℥i, or hamamelis, 1 per cent., or silver nitrate, 1 : 1000, repeated once or twice daily for a few weeks. Ionic medication may be employed as for colitis (*q.v.*). It is sometimes necessary, for purposes of drainage, to dilate or even incise the sphincter (see under Fissure in Ano).

Rest in bed, a hot water bag to the perineum, warm sitz-baths for half an hour, t.i.d., and a bland soft diet are of importance.

Ischiorectal abscess (*q.v.*) may follow proctitis; perisigmoiditis and diverticulitis (*q.v.*) may follow sigmoiditis.

There is a very contagious, epidemic, ulcerative and gangrenous proctitis of the tropics, with mucous and bloody diarrhœa, tenesmus, fever, and great prostration, which is treated as follows: The bowels are purged, following which enemas are used. A mixture of lemon juice and white rum and a decoction of spigelia anthelmintica are used as enemata; and the latter is also given by mouth. The natives believe that the disease is caused by chewing the green stalks of unripe maize.

Professional Cramps or Spasms. — See Cramps, Professional.

Progressive Bulbar Paralysis.—See Atrophies, the Progressive Muscular.

Central Muscular Atrophy.—See Atrophies, the Progressive Muscular.

Interstitial Hypertrophic Neuritis of Childhood.—See Interstitial Hypertrophic Progressive Neuritis of Childhood, and Atrophies, the Progressive Muscular.

Lenticular Degeneration.—See Chorea, Tetanoid.

Muscular Atrophy.—See Atrophies, the Progressive Muscular.

Muscular Dystrophy.—See Dystrophy, Progressive Muscular.

Neural Muscular Atrophy.—See Atrophies, The Progressive Muscular.

Prolapse of the Rectum and Anus.—L. *pro,* before + *lab'i,* to fall; *rect'um,* straight; L. *a'nus.* Etiology.—Straining due to constipation, diarrhœa, ulceration, hemorrhoids, rectal polypi, stricture of the bowel, pinworms, phimosis, urethral stricture, stone in the bladder, or whooping-cough; laceration of the sphincter due to childbirth; paresis or paralysis. Anæmia, debility, and rickets may act as predisposing causes. Children are mostly affected.

Treatment.—Conservative Treatment in Children.—Correct the cause. Reduce the prolapse with oiled fingers, aided, if need be, by cold applications. To prevent the extrusion of the bowel during defecation, strap the buttocks together with two narrow strips of adhesive plaster, which should not prevent defecation when the movement is soft. After each act of defecation, remove the straps, cleanse the parts, and reapply the straps. The stools may be kept soft by means of milk of magnesia (see Drugs, Part 11), in milk; or olive oil after meals, t.i.d.; or aromatic fluid extract of cascara sagrada; or milk of magnesia and aromatic syrup of rhubarb, aa—one to three teaspoonfuls daily (see Constipation). In obstinate constipation, inject, every night, high into the colon, through a small rectal tube or a No. 18 American catheter, with a 4 oz. bulb syringe, about four ounces or less of olive oil, to be retained during the night. The next morning after breakfast, place the child recumbent on a bed-pan with the buttocks at least four inches higher than the shoulders, and encourage him to defecate. If he cannot, insert a glycerine suppository, or inject soapsuds. After two weeks of such treatment, gradually dispense with the oil injections, tentatively. Two months or longer are required for a cure. (Kerley.)

For diarrhœa and tenesmus, inject tannic acid in ice-water, gr. xx ad ℥i; or insert an opium suppository. (Holt.)

Conservative Treatment in Adults.—Prescribe an abundant diet, tonics containing strychnine, electric stimulation to the fundament, a daily gentle laxative, such as compound licorice powder, cascara sagrada, or compound rhubarb pill, defecation in the recumbent posture, and a cool enema following defecation, "to restore tone to the anal muscle." (Abbe.)

To retain the rectum in place, the patient should wear, for several weeks, or until the above measures have restored the normal tone, a vulcanite plug with a narrow anal stem and perineal bar, supported by a pad and T-bandage.

The above non-surgical treatment is said to be successful in both children and adults, in the great majority of cases.

If unsuccessful, then resort either to cauterization or to a cutting operation.

Robert Abbe, writing in Keen's Surgery, describes the Paquelin cautery method as follows: "The Paquelin cautery should be used under anæsthesia, and should be preceded by the same precautions as before other surgical work on the rectum, namely, three days of gentle intestinal purgation and a cleansing enema before operation. The bowel may be treated either when prolapsed or after reduction. In the latter case, a relaxed sphincter will allow a rather larger bivalve or wire retractor to be used in the lithotomy posture. In either case the cautery is slowly drawn along the mucous membrane lengthwise of the bowel, at six lines, one-quarter inch wide from the anal margin upward, and at two or three points downward to the skin. This sears deeply the mucous membrane, and heats the submucous layer enough to induce inflammatory exudate, but does not go deeply enough into the muscular layer to burn through. An opiate suppository (aqueous extract, gr. i, for adults) is then placed in the rectum, and a rubber tube wound with iodoform gauze and smeared with vaseline is inserted. The bowels should then be kept constipated for five days or more, and the patient kept recumbent for ten to twelve days, all bowel movements being accomplished on the bedpan. This method has uniformly been found efficient for permanent relief of prolapsus ani and many cases of rectal prolapse. A simple cylindric speculum, with six lateral fenestræ, has been devised by Newman, of Glasgow, for linear cauterization of pro-

lapsus, and used even in those cases where hemorrhoids are associated. The cauterized line begins a half-inch above the skin top and effects a bloodless cure."

In mild cases in children, the protruded mucous membrane may be cauterized, under general anæsthesia, with fuming nitric acid until whitened, using the glass stopper of the nitric acid bottle, and taking great care to avoid touching the skin margin of the anal opening. The bowels are first emptied as described above. Before applying the acid, the mucous membrane is wiped dry with gauze After the cauterization, the mucous surface is anointed with olive oil, the protrusion replaced, a pad placed over the anus, the buttocks and legs strapped and bandaged together, and the patient kept in bed for ten to fourteen days, the bowels being confined with opiates (Part 11) for the first six or seven days. At the end of this time the rectum is emptied by means of oil enemata followed by warm water; and thereafter, for two weeks, the child is made to defecate in the recumbent position with the hips elevated. (Earle.)

Proliferative Peritonitis.—L. *pro'les*, offspring *-fer're*, to bear. See Peritonitis, Simple Chronic.

Pseudo-Angina.—Gr. ψευδής false. See Angina Pectoris.

Psilosis; Sprue.—See Sprue.

Pseudoleukæmia.—Gr. ψευδής false + λευκός white + αἷμα blood. See Hodgkin's Disease.

Pseudoleukæmic Anæmia of Infants.—See Anæmia Infantum Pseudoleukæmica of Von Jaksch.

Pseudomembranous Bronchitis.—See Bronchitis, Fibrinous.

Psittacosis.—Gr. ψιττακός parrot. A rare, quite fatal, epidemic disease, transmitted by parrots, and characterized by an incubation period of about seven to ten days, followed by pneumonic and typhoid symptoms of about fifteen to twenty days duration.

In parrots the disease is manifested as an enteritis.

The Treatment is symptomatic.

Psychasthenia.—See Neurasthenia.

Ptomaine Poisoning.—Gr. πτῶμα carcase. See Poisoning.

Ptosis.—See Part 6, Eye Diseases.

Ptyalism; Salivation.—Gr. πτύαλον spittle; L. *sali'va*. **Causes.**—Interference with swallowing, due to tonsillitis, quinsy, pharyngitis, œsophagitis, and paralysis of the muscles of deglutition, lips, and tongue, as in bulbar palsy; dentition; dental caries; stomatitis; certain drugs, *e.g.*, mercury, iodide, gold, copper, tobacco, pilocarpine, muscarin; gastric ulcer; hyperchlorhydria; nausea; pregnancy; menstruation; pain; worms; uræmia; cretinism; exophthalmic goitre; pancreatic obstruction; certain infectious diseases, especially smallpox; trigeminal neuralgia; migraine; chorea; rabies; hysteria; idiocy.

Treatment.—Attend to the cause. Useful drugs are the bromides, opium, and atropine, in full doses, and a mouth-wash or troches of tannic acid (see Drugs, Part 11.)

Pulmonary Abscess.—L. *pul'mo*, lung; *absces'sus*, a going apart.—**Symptomatology.**—Cough, dyspnœa, pain, a septic temperature, and the copious expectoration of pus containing elastic tissue. The local signs are dulness on percussion, and bronchial breath sounds. Employ the X-ray as an aid in locating the abscess. Possible sequelæ are empyema, pyoneumothorax, gangrene, purulent pericarditis, and brain abscess.

Etiology.—Lobar pneumonia; bronchopneumonia, especially the aspiration form; chronic pulmonary tuberculosis; foreign bodies; carcinoma; neighboring suppuration (empyema, suppurative mediastinitis, liver abscess, suppurating echinococcus cyst of the liver, subphrenic abscess); puncture of the pleura with an exploring needle, broken rib, or other body.

Treatment.—Prescribe a concentrated liquid diet, alcohol freely, a tonic of iron or arsenic, creosote, or guaiacol, internally (see Drugs, Part 11), and steam inhalations medicated with creosote (10 to 15 drops to the pint of steaming water), or carbolic acid (same strength) or guaiacol (same strength) or turpentine (℥ss to the pint), or tinct. of benzoin (℥ii–viii to the pint). A respirator may be worn during the day containing cotton moistened with equal parts of alcohol, spirits of chloroform and creosote (see also Bronchitis). Localizable abscesses, however, should be opened and drained without delay. The following technique is abstracted from S. Robinson:

If thoracentesis reveals pus, excise an inch of rib subperiosteally, enter the abscess cavity with the finger, and pack with gauze. If thoracentesis is negative, a more extensive operation is required. Make a semicircular skin and muscle flap, with the base upward, exposing three ribs for a distance of about three inches. Resect the exposed ribs subperiosteally, and remove the intercostal tissue and vessels after ligating opposite the rib ends. Then, to expose the pleura, carefully incise for two centimetres the posterior periosteum of that rib nearest the centre of

the suspected area. Introduce the forefinger and separate the pleura from the posterior periosteum. This is rendered possible only in the presence of pleural inflammation, thickening, and adhesions. Then cut away the posterior periosteum and interlying connective tissue of all the ribs resected. Explore now for underlying pus with a needle or blunt instrument, or the finger, until the abscess cavity is reached, which should be packed with gauze. Restore the skin flap and suture it in layers, after first excising a circular portion of it, exceeding in diameter the size of the abscess cavity. Allow the gauze packing to remain in place for three days.

Where the abscess is more centrally situated, and the parietal and visceral layers of the pleura are not adherent, the normal pleural cavity must be opened, the lung sutured under inflation to the edges of the thoracotomy wound, and the lung explored with the finger or cautery.

Pulmonary Actinomycosis. — See Actinomycosis, in Part 5, Skin Diseases.

Anthrax.—See Anthrax, in Part 5, Skin Diseases.

Arthropathy. — See Osteo-Arthropathy.

Carcinoma.—See Pulmonary Tumors.

Pulmonary Cirrhosis (Syn.—Pulmonary Sclerosis, Chronic Interstitial Pneumonia; Pulmonary Fibrosis; Fibroid Phthisis).—A comparatively rare disease (excluding tuberculous fibrosis, which is not here considered). The symptoms are those of chronic bronchitis: chronic cough and expectoration, and dyspnœa on exertion. Bronchiectasis is often present. Hæmoptysis is frequent. Cardiac hypertrophy and dilatation are consequences. The disease is incurable.

In marked cases, the affected side of the thorax is retracted, especially between the clavicle and the sixth rib in front, and below the angle of the scapula behind, the intercostal spaces are narrowed, the sternum deflected, the spine curved, the shoulder drooped, the respiratory movements diminished, and the heart displaced by traction toward the diseased lung. Tactile fremitus is usually increased, râles are present, and on the sound side a compensatory emphysema.

Chronic pulmonary tuberculosis is the commonest cause of pulmonary fibrosis, but it is considered elsewhere (see Tuberculosis, Pulmonary).

Etiology.—Local fibrosis is caused by an abscess, infarct, gumma, tubercle, tumor, hydatid cyst, collection of pigment, emphysema, actinomycosis, glanders, and leprosy. Diffuse fibrosis, which is always unilateral except in some cases following bronchopneumonia, is a result of pneumonia (lobar or lobular), pneumokoniosis, prolonged bronchitis, chronic pulmonary congestion, syphilis, a foreign body in a bronchus, chronic adherent pleuritis, compression of the lung by a pleural exudate (empyema, etc.), new growth, thoracic aneurysm, mediastinal tumor, or œsophageal diverticulum.

Treatment.—Prescribe correct hygiene, warm clothing, preferably a warm climate, an abundance of nutritious food, perhaps a tonic, such as the elixir of iron, quinine, and strychnine phosphate, one teaspoonful well diluted, t.i.d.p.c., the avoidance of dust, alcohol, and tobacco, and systematic breathing exercises to combat dyspnœa. Treat the associated chronic bronchitis or bronchiectasis symptomatically, as described under these captions. The occurrence of broken cardiac compensation calls for digitalis (see Cardiac Insufficiency.)

Pulmonary Collapse in Infants and Children.—See Atelectasis.

Pulmonary Collapse, Post-Operative.—A gradual partial or complete collapse of the lower lobe of one or both lungs, with the appearance after twenty-four to thirty-six hours, of the following signs, viz., rise of the heart, liver or stomach or both, perhaps extension of stomach tympany into the axilla; diminished breath-sounds, distant bronchial breathing, altered voice-sounds, diminished resonance, and perhaps crepitations over the collapsed lower lobe or lobes; expanded and immobile lower thorax; and increased breath-sounds over the upper lobes. Alarming attacks of dyspnœa sometimes occur, lasting from a few seconds to three or four hours. The condition is the result of a toneless flaccidity of the abdominal muscles. Massive collapse of the lower lobes occurs also in complete paraplegia and in patients long bed-ridden.

Treatment.—Prop the patient up in a sitting posture, compress the lower thorax bimanually at intervals, and encourage the patient to breath deeply, using the abdominal muscles. A large mustard poultice (Part 11), may be of service. Oxygen may be administered (see under Pneumonia), and if considered advisable, strychnine, gr. $\frac{1}{20}$, or camphor, gr. i–ii, in ether, ♏x–xv, may be administered hypodermically. If there is no fever (indicative, possibly, of inhalation bronchitis or pneumonia), the patient may blow fluid from one Wolff's bottle to another. (J. C. Briscoe.)

Pulmonary Congestion.—**I. Acute or Active Congestion.**—The symptoms and signs are those of pneumonia.

CAUSES.—Inflammation (pneumonia, bronchitis, pleurisy, tuberculosis); malarial or other chills; inhalation of very hot or very cold air, or of irritating gases; violent exertion.

TREATMENT.—The treatment is that of the initial stage of pneumonia, *e.g.*, dry cups over the whole chest, or the withdrawal of 20 to 30 ounces of blood in robust subjects; mustard poultices; catharsis.

II. Passive Congestion.—SYMPTOMATOLOGY.—Dyspnœa on exertion, cyanosis, cough, with or without expectoration, which is apt to be blood-stained; dulness, increased fremitus, and moist râles over the bases of the lungs.

CAUSES.—Valvular heart disease; compression of the bases of the lungs by abdominal tumors, meteorism, or ascites; compression of the pulmonary veins by tumor or aneurysm; hypostasis due to weak heart action, prolonged recumbency, and deficient aëration in the aged and feeble.

TREATMENT.—The treatment of congestion due to cardiac insufficiency is that of the underlying affection (see Cardiac Insufficiency).

Hypostatic congestion should be avoided by changing the patient's position every hour or two. When it occurs, the bowels should be opened, the heart carefully stimulated, dry cups (*q.v.*) applied over the bases of the lungs in back, and perhaps ammonium carbonate (Part 11) administered.

Pulmonary Distomiasis.—See Distomiasis.

Embolism.—See Embolism.

Emphysema.—See Emphysema, Pulmonary.

Fibrosis.—See Pulmonary Cirrhosis.

Fluke.—See Distomiasis.

Pulmonary Gangrene.—Gangrene of the lung is usually first manifested by an abrupt increase in the preëxisting symptoms, increase of cough and fever, and the occurrence of chills. The sputum and breath become intensely fetid, and the sputum usually copious, separating on standing into three layers, the bottom layer thick, opaque, yellow or greenish-brown, and containing pus and elastic tissue, the middle layer a transparent serous fluid, and the top layer thick, opaque, dirty yellow and frothy. Prostration and complete anorexia occur. Hemorrhage is very prone to occur. Empyema and pyæmia may ensue. The condition is very fatal.

Etiology.—Lobar pneumonia; bronchopneumonia, particularly aspiration penumonia; tuberculosis; bronchiectasis; pulmonary abscess; pulmonary embolism or thrombosis; foreign body in a bronchus; traumatism; pressure upon the pulmonary vessels by an aneurysm or tumor; rupture into the lung of an œsophageal cancer; debilitating disease, especially diabetes.

TREATMENT.—The patient should be in bed on a highly concentrated liquid diet, including liberal doses of alcohol. For excessive cough, pain, and hemorrhage, administer morphine. The internal and external use of antiseptics and deodorants is described under fœtid or putrid bronchitis (*q.v.*), and pulmonary abscess (*q.v.*).

If the gangrene is circumscribed, an early operation, as described under Pulmonary Abscess, offers the best prospects of cure. Use the X-ray (*q.v.*) as an aid in locating the diseased area.

Pulmonary Hemorrhage.—See Hæmoptysis.

Hypertrophic Osteoarthropathy.—See Osteo-Arthropathy.

Infarction.—See Embolism.

Neoplasms.—L. *pul'mo*, lung; Gr. *νέος* new + *πλάσμα* formation. See Pulmonary Tumors.

Pulmonary Œdema.—L. *pul'mo*, lung; Gr. *οἴδημα* swelling. **I. Acute.**—Acute pulmonary œdema is manifested by the sudden occurrence of dyspnœa, pallor, lividity, a rapid weak pulse, perhaps cough and expectoration, the latter sometimes copious and albuminous, frothy and pinkish, and the presence of loud bubbling râles heard over the whole chest. The prognosis is always serious.

ETIOLOGY.—Cardiac and vascular disease (myocarditis, valvular disease, angina pectoris, arteriosclerosis); Bright's disease; a convulsive seizure, but particularly status epilepticus; anæsthetization; apoplexy; acute alcoholism; asthma; tabes dorsalis; extreme cold; infectious disease; pleuritic effusion; too rapid paracentesis thoracis vel abdominis causing sudden expansion of the lungs; erythræmia; angioneurotic œdema; pregnancy; labor; intense mental emotion; hysteria (?); poisoning with lead, iodine, adrenalin, acetic ether, nitric oxide, ammonia.

TREATMENT.—Raise the foot of the bed, unless the dyspnœa is thereby increased. Apply dry cups to the entire back of the chest, followed by large mustard poultices (Part 11) to the whole chest. A dry cup is applied as follows: a tumbler is swabbed quickly with alcohol, the edges wiped dry, the alcohol ignited and allowed to burn for a few moments, and the cup then quickly applied. Venesection, withdrawing 20 to 30 oz. of blood, or wet cupping (*q.v.*) may be advisable. Atropine (Part 11) in sufficient

dosage to produce flushing is well recommended. The feeble heart must be stimulated, employing to this end—aromatic spirits of ammonia, one teaspoonful well diluted in water; caffeine citrate, gr. ii–v; digitalin (*q.v.*); camphor, gr. i–ii, in oil or ether, mx–xv, every half-hour; strychnine, gr. $\frac{1}{20}$; strophanthin, gr. $\frac{1}{300}$ to $\frac{1}{100}$, intravenously or intramuscularly; amyl nitrite by inhalation for the purpose of abstracting blood from the lungs. Oxygen inhalations (see under Pneumonia) may or may not be of some service. Croftan recommends ergot hypodermically as a vasoconstrictor. If the patient is apprehensive, administer morphine, gr. $\frac{1}{8}$ to $\frac{1}{4}$. Miller considers morphine the best remedy for pulmonary œdema.

In nephritis, employ catharsis and diaphoresis, and make hot applications to the kidneys, as described under Uræmia.

To prevent recurrent attacks the patient should avoid overfatigue, overeating, emotional excitement, and sudden chilling.

II. Chronic.—Chronic pulmonary œdema occurs in chronic cardiac or renal disease, etc., and is manifested by the presence of numerous râles over the dependent portions of the lungs (see Pulmonary Congestion, Passive).

Pulmonary Sclerosis.—See Pulmonary Cirrhosis.

Tuberculosis.—See Tuberculosis, Pulmonary.

Pulmonary Tumors.—Carcinoma, endothelioma, and sarcoma occur both as primary and secondary growths, usually the latter. There is an acute galloping pleuropneumonic form of carcinoma, and a chronic pleuro-pulmonary form. Tuberculosis is usually diagnosed. The X-ray may be of assistance. A Wassermann test should be made. A pleuritic effusion, usually hemorrhagic, may be the most prominent feature. Mediastinal pressure symptoms sometimes occur early as a result of involvement of the glands.

Echinococcus cysts sometimes occur. If not operated upon, death from rupture or septic infection is prone to occur. The cyst wall should be sutured to the external wound, and continuous drainage established. It may perhaps be possible to remove the inner secreting layer of the cyst (see Echinococcus Disease).

Malignant intrathoracic growths should be subjected to radiotherapy (*q.v.*). The thorax, including the axillæ and supraclavicular regions, should be divided into convenient areas, and the surrounding skin protected with lead screens. Use a hard tube (10 Bauer, if possible), as near as possible to the skin surface, with a current of 4 to 5 milliampères, using a 3 mm. aluminium filter. Measure the dose each time by means of Kienböck paper or other means. Give ten or twelve exposures at one sitting, followed on succeeding days "with as many exposures as it is possible to fit into the thoracic area without overlapping." A dose of 100X or more may thus be administered in one or two days. Confine the patient to bed and watch the pulse and temperature for several days thereafter, as a marked reaction may occur. (Knox.)

Pulsus Alternans.—L. *pul'sus*, stroke; *alternans*, alternating. See Arrhythmia.

Purpura.—See Part 5, Skin Diseases.

Putrid Bronchitis.—See under Bronchitis.

Sore Mouth.—See Stomatitis, Ulcerative.

Pyelitis.—See Pyelonephritis, following.

Pyelonephritis.—Gr. *πύελος* trough (pelvis) + *νεφρός* kidney + *-ιτις* inflammation. Under this caption are embraced pyelitis, catarrhal or suppurative, pyonephrosis, and suppurative nephritis or kidney abscess.

Pyelitis or pyelonephritis may be acute or chronic. The symptoms may be very mild, or they may be severe. They are as follows: some elevation of temperature (except, perhaps, in pyonephrosis); usually frequent urination; perhaps dysuria; in acute cases usually oliguria; in chronic cases polyuria; pyuria or bacteriuria; tenderness at the costo-vertebral angle; perhaps some enlargement; sometimes chills, fever, and a septic state. Pain and even tenderness are, in rare cases, referred to the sound side. The affection is common in children (especially female infants) and in the aged, but is uncommon in adult life.

Have the patient void the urine each time during the twenty-four hours in separate bottles of the same size, and mark each bottle with the time of urination. "If the case is one of cystitis without involvement of the kidney, the amount of pus that settles is practically the same in each bottle (allowing for differences in the amount of urine in the different bottles). But if the pus comes from the kidney, it is almost always discharged intermittently, and hence some of the bottles will be almost free from sediment, while in a group of others the amount of pus increases as we pass along the line, reaches a maximum in one or two bottles, and decreases again in those representing the later acts of micturition. Pus from the bladder is generally

alkaline, although in tuberculosis it may be acid; pus from the kidney is generally acid." Both organs, however, are frequently involved (R. C. Cabot). Says Howard A. Kelly: "All persistent acid pyurias in young people are presumptively tubercular (usually due to disease of the kidney) until the contrary is proved."

Examine the pus, or centrifuged (for at least five minutes) urinary sediment, for tubercle bacilli (see under Tuberc. Pulm.), and if necessary, inoculate a guinea pig intraperitoneally. For both purposes obtain the urine under aseptic precautions (first cleanse the glans penis and prepuce and irrigate the urethra with boric acid solution, ʒi ad Oi, then take the last urine voided, in order to exclude, as far as possible, the smegma bacillus), centrifuge it for at least five minutes, and use the washed sediment. Keep the guinea-pig under observation for three or four to six weeks, then kill it and examine sections of the retroperitoneal glands, spleen, and liver microscopically.

Says Keyes: "Chronic pyuria, frequency, and pain, in the absence of retention, suggest prostatitis (chronic posterior urethritis) or pyelonephritis rather than cystitis." "When the urine is ammoniacal, there is always cystitis"; but pyelonephritis may, of course, also be present.

Says Frank Kidd: "If fever is present, the case cannot be one of pure cystitis. Fever with pyuria in a woman is always pyelitis, and in a man is usually prostatitis." If the second of two glasses in which the urine has been passed "is cloudy, the case may be either cystitis or pyelitis. If there is fever, it must be pyelitis. If there is no fever, the diagnosis can only be made by cystoscopy and catheterization of the ureters." In man, if the second glass is clear, gently massage the prostate, and examine the expressed secretion for pus cells and bacteria.

Cystoscopy and ureteral catheterization are important diagnostic means. Indigo-carmine (0.16 gm. in sterilized water) or methylene blue (Part 11) may be injected hypodermically as an aid in finding the ureteral orifices. Search the ureter for stricture or stone (a wax-tipped bougie may be used for the latter purpose). Examine the separate urines obtained by ureteral catheterization (see Urinalysis). "The various segregators," says Young, "are absolutely unreliable." "The finding of a thickened ureter by vaginal examination is of the utmost importance" in the diagnosis of renal tuberculosis. (T. R. Brown.)

The pelvis of the kidney may be outlined by means of the X-ray after the injection of about 20 c.c. of 25 per cent. sodium bromide solution, through the ureteral catheter.

Etiology.—Acute infectious diseases (catarrhal fever, scarlet fever, measles, smallpox, influenza, typhoid fever, pneumonia, dysentery, septicopyæmia, ulcerative endocarditis, tuberculosis, syphilis, etc.); focal infections (furuncle, carbuncle, tonsillitis, alveolar abscess, pyorrhœa alveolaris, sinusitis, rectal ulceration, osteomyelitis, contagious impetigo, actinomycosis, etc.), intestinal diseases; constipation; neighboring inflammation (appendicitis, hepatitis, pelvic peritonitis, enteritis, psoas abscess); parasites (actinomyces, eustrongylus gigas, echinococcus, filaria); local irritation due to turpentine, cantharides, cubebs, glycosuria, polyuria, hyperacidity, calcium oxalate crystals (see Nephrolithiasis), and calculi; retention of urine due to urethral stricture, ureteral stricture, contracted bladder, phimosis, enlarged prostate, stone, pregnancy, pelvic growths, nephroptosis, paralysis of the bladder due to injury or disease of the spinal cord, voluntary holding of urine; traumatism; instrumentation; malignant disease; gonorrhœa; overexertion with subsequent chilling; chronic passive congestion; debilitating influences (anæmia, malnutrition, tabes, paresis, etc.); cystitis.

Causal bacteria, named in the order of their frequency, are the colon bacillus (nearly always the cause), the tubercle bacillus, staphylococcus, streptococcus, gonococcus, typhoid bacillus, paratyphoid bacillus, pneumococcus, and proteus bacillus (MacGowan). In tuberculosis, colon, and typhoid infections, the urine is acid, in proteus infection alkaline, and in staphylococcus and streptococcus infections less acid than normal, or alkaline.

Treatment.—I. Acute Pyelitis or Pyelonephritis.—Put the patient to bed on a light, bland diet, consisting largely of milk or buttermilk and an abundance of water, 4 to 6 pints a day (see under Bright's Disease, for the appropriate dietary). Exclude alcohol, condiments, spices, radishes, asparagus, rhubarb, tomatoes, lemons, cheese, red meats, smoked and salted meats and fish, tea, coffee, ginger ale, carbonated beverages, and tobacco, because of their irritating effects upon the kidney. Open the bowels freely.

The following sedative and astringent diuretics (see Part 11 for all drugs) may prove of service, *e.g.*, flaxseed or linseed tea, buchu, uva ursi, pareira brava, triticum repens, saw palmetto; but the remedy par excellence is urotropine.

It liberates formaldehyde only in an acid urine. If the urine is alkaline, it may be rendered acid by the administration of benzoic acid, boric acid, camphoric acid, sodium or ammonium benzoate, or acid sodium phosphate. Reduce the dose of urotropine if it causes irritation. For an irritating hyperacid urine, prescribe sodium or potassium bicarbonate, or potassium citrate. It may be of advantage to produce a medium of a different reaction than the offending bacteria are accustomed to.

Of less value than urotropine are methylene blue and salol.

Vaccine therapy is recommended by some, *e.g.*, autogenous colon vaccine, five millions, increased by five millions, every three days, up to fifty millions if necessary. (J. Keogh Murphy.)

During the first forty-eight hours, the ice-bag may be applied, followed by hot fomentations or hot water, sand or bran bags, or dry or wet cups (see Cupping).

In very severe cases, Hunner advises continuous irrigation, through a No. 5 French renal catheter, with normal saline solution (℥i ad Oi) or boric acid (℥i ad Oi), or silver nitrate (1 : 10,000) until the symptoms subside; but J. Keogh Murphy considers irrigation "inadmissible."

In pregnancy cases, have the patient lie upon the opposite side. The bladder may be distended with sterile boric acid or normal salt solution for the purpose of exciting peristalsis in the ureters. The induction of premature labor is rarely required, but it should be resorted to promptly should serious symptoms arise.

The occurrence of septic symptoms or of enlargement of the kidney indicates pus retention and calls for free drainage by means of catheterization, urethrotomy, cystotomy, or nephrotomy, according to the site of the obstruction. Obstructing stones should be removed. A suppurating kidney should be removed. After nephrostomy, a discharging sinus remains in 50 per cent. of the cases, necessitating nephrectomy. In performing the latter, the ureter should be ligated and divided as low down as possible.

Acute pyelitis usually clears up in about ten or fourteen days. It may become chronic. Continue the urotropine and copious waterdrinking for several weeks after the inflammation has subsided and the urine has cleared.

II. Chronic Pyelitis or Pyelonephritis.—The treatment depends upon the cause. Calculi should be removed (see Nephrolithiasis); retention (*q.v.* in Part 3, Genito-Urinary Diseases), should be corrected; a ureteral stricture should be dilated every ten to fourteen days, or less often, or corrected, if possible, by operation; a tuberculous kidney should be removed; chronic constipation, anæmia, malnutrition, or other possible causal influence should be corrected.

Prescribe copious water drinking, a dietary like that for chronic nephritis (*q.v.*), and urotropine. Vaccine therapy is well recommended.

The following stimulating and antiseptic diuretics are recommended in chronic pyelitis, viz., juniper, oil of origanum, oil of turpentine, oil of sandalwood, and oil of copaiba.

In chronic cases which are not relieved in ten days by urotropine, Hunner injects four two-way glass syringefuls of 15 c.c. capacity of silver nitrate solution, 1 : 1000, followed by a syringeful of normal saline (℥i ad Oi) or boric acid (℥i ad Oi) solution to wash out the silver. The pressure should not be carried to the point of producing pain. The renal pelvis may be irrigated once or twice weekly with silver nitrate, 1 : 10,000 to 1 : 5000; or protargol, 1 : 500; or boric acid solution. If, however, the pus does not diminish after a few irrigations, it is useless to continue them. Local treatment is contraindicated in renal calculus and tuberculosis.

Operation upon the kidney (nephrotomy; nephrectomy) should not be undertaken unless considered absolutely necessary. Says Keyes: "To do nothing is usually preferable." "If operation is undertaken, it should be with the deliberate intention of freeing the renal pelvis of adhesions, decapsulating the kidney (to relieve tension), and, if necessary, performing nephropexy (to relieve retention)." "Nephrotomy should not be performed unless required in the search for stone." Nephrectomy, of course, should not be considered until the other kidney is proved to be functionally active (see Urinalysis). The presence of albumen alone in the urine from the other kidney is not a contraindication to nephrectomy, but the presence of pus and bacilli is.

Pyæmia.—Gr. πύον pus + αἷμα blood. See Septicæmia and Septico-Pyæmia.

Pyloric Obstruction.—Gr. πυλή gate + οὖρος guard. See Dilatation of the Stomach, Chronic.

Pyloric Spasm.—See Dilatation of the Stomach, Chronic.

Stenosis.—See Dilatation of the Stomach, Chronic.

Pyenophrosis.—Gr. *πύον* pus + *νεφρός* kidney. See Pyelonephritis.

Pyopericardium.—Gr. *πύον* pus + *περί* around + *καρδία* heart. See Pericarditis.

Pyopneumothorax.—Gr. *πύον* pus + *πνεῦμα* air + *θῶραξ* chest. See Pneumothorax.

Pyorrhœa Alveolaris; Rigg's Disease; Periodontitis, Chronic Suppurative.—Gr. *πύον* pus + *ῥοία* flow; L. *al'veus*, a trough; Gr. *περί* around + *ὀδούς* tooth + *-ιτις* inflammation. Chronic suppurative inflammation of the pericemental membrane or tissue, which occupies the space between the root of a tooth and the alveolus of the jaw, manifested by the presence of gingivitis, loose teeth, a characteristic disagreeable odor, and the appearance of pus on pressing the gum.

The disease occurs in gout, rheumatism, nephritis, diabetes mellitus, pernicious anæmia, tuberculosis, syphilis, tabes, and other constitutional affections, but it may possibly be purely local. Various microörganisms may be demonstrated, especially streptococci, pneumococci, spirochetæ, and the endamœba gingivalis or buccalis.

As a result of septic absorption the following complications are possible, viz., headache, indigestion, diarrhœa, constipation, acne, nephritis, pyelitis, appendicitis, cholecystitis, pleuritis, arthritis, myositis, neuritis, endocarditis, anæmia, Hodgkin's disease, etc., etc.

Treatment.—All stumps and dead or pulpless teeth should be removed, and the remaining teeth scaled and polished. Infected pockets should be irrigated, or filled once daily with antiseptics by means of a hypodermic syringe; or, better, obliterated by operation. The following antiseptics are used, viz., hydrogen peroxide, 3 to 10 per cent.; Dobell's solution (Part 11); emetine hydrochloride, 0.5 per cent. solution (should not be swallowed). Once daily the gum margins should be painted, by means of a cotton-wound wooden applicator, with tincture of iodine, or the following preparation:

℞ Zinci iodidi..... 15.0 (gr. lxxii)
Aquæ..... 10.0 (mxlviii)
Iodi..... 25.0 (℥ii)
Glycerini..... 50.0 (℥iv) (Talbot.)

After the application, hold the lips and cheeks away until the iodine has dried (Talbot). Zinc ionization (*q.v.*) is recommended. A 3 per cent. solution of zinc sulphate is used, with a current of 3 to 4 milliampères for ten minutes.

Instruct the patient to brush the teeth frequently, especially before breakfast, with castile soap and warm water, and to use an antiseptic mouth-wash, such as Dobell's solution, or hydrogen peroxide, 3 to 10 per cent., or fluid extract of ipecac 2 to 3 drops in half a glass of water (Bass); or the following:

℞ Hydronaphtholis..... gr. xv
Alcoholis,
Aquæ, aa..... ℥i

M. Sig.—Thirty drops in a glass of warm water, twice daily, as a mouth-wash. (Riesman.)

℞ Liquoris potassæ..... ℥vi
Acidi carbolici..... ℥iv
Liquoris cocci..... ℥ii
Aquam, ad..... ℥viii

M. Sig.—One teaspoonful to half a tumblerful of warm water as a mouth-wash. (F. St. J. Steadman.)

The hypodermic injection of emetine hydrochloride, gr. ss daily, for three to six successive days, causes a prompt disappearance of the amœbæ; but since reinfection occurs in four weeks in 12 per cent. of the cases, the course of emetine must be repeated every three to four weeks.

B. L. Wright and P. G. White recommend intramuscular injections of mercuric succinimide every seven days (for 3 or more injections), gr. ss for men, ⅕ to ⅖ less for women. "If the patient is improving, each succeeding dose may be slightly reduced."

Vaccine therapy may be of benefit in chronic intractable cases. A stock vaccine, either sensitized or unsensitized (see Part 11) may be used, or an autogenous vaccine prepared from the pus pockets. "If an unsensitized bacterin is employed, the initial dose advised is 150 million of the mixed bacteria; from 250 to 270 million may be given as the initial dose if the sensitized cultures are employed. Subsequent doses are injected at intervals of from seven to ten days, gradually increasing or decreasing according to indications. If the reactions are too severe, the doses should be reduced or temporarily discontinued. Every dose should be carefully gauged by the effect obtained from the preceding dose. If no improvement follows the initial dose, subsequent injections should be increased until amounts large enough to produce a mild clinical reaction (demonstrated by symptoms of malaise and possibly aggravation of the local symptoms) are reached. If a marked clinical reaction occurs after a dose, characterized by rising temperature, the next dose should be smaller." (F. E. Stewart.)

Mouth breathing should be corrected (see Part 8, Nose Diseases), and the general

health must be looked after. Several months may be required for a cure. If conservative measures fail, a cure may be effected by the extraction of the teeth.

Pyothorax.—Gr. πύον pus + θῶραξ chest. See Empyema.

Pyrexia.—Gr. πυρέσσειν to be feverish. See Fever.

Pyrosis; Heartburn.—Gr. πύρωσις burning. See Hyperacidity.

Pyuria.—Gr. πύον pus + οὖρον urine.

Causes.—Urethritis (gonorrhœal, etc.); prostatitis; vesiculitis: cystitis; pyelitis and pyelonephritis; nephrolithiasis; renal tuberculosis; tuberculosis of the prostate; rupture into the urinary tract of an abscess of the appendix, Fallopian tube, prostate, or spine. Exclude leukorrhœa. See Pyelonephritis for diagnostic data.

Quincke's Disease.—See Angioneurotic Œdema, in Part 5, Skin Diseases.

Quinsy.—L. *cynańche*, sore throat. See Part 9, Throat Diseases.

Rabies.—L. *ra'bere*, to rage. See Hydrophobia.

Rachitis.—Gr. ῥάχις spine + -ιτις inflammation. See Rickets

Radial Nerve.—L. *radia'lis*, pertaining to a radius. See Brachial Plexus.

Radiology.—See Radium, and Röntgenology.

Radium.—Radium is obtained in the form of its salts, $RaBr_2 2H_2O$, $RaCl_2 2H_2O$, $RaCO_3$, and $RaSO_4$. It is constantly 2° or 3° C. higher in temperature than its surroundings, and is constantly charged with negative electricity. The air surrounding radium is ionized and becomes a conductor of electricity. An atom of radium, which in the aggregate constitutes a solid, throws off a positively electrified atom of helium (alpha particle), and the residual atom that remains, which in the aggregate constitutes a gas, is called "radium emanation," and is itself radio-active, that is, it undergoes spontaneous disintegration. The emanation expels alpha particles, with the further formation of a new residual body called Radium A, which by further changes gives rise to Ra B and Ra C (Ra C_1 and Ra C_2). Ra C emits alpha particles (positively charged, and are deviated away from a magnet), β rays or electrons (negatively charged, the charge equal to that of the alpha particles, and deviated toward the magnet), and γ rays (not deviated by a magnet), the latter being ether pulses, like those of light, of extremely short length and high penetrability. All three rays are not refracted or reflected. They all penetrate substances opaque to ordinary light; but alpha rays are practically all absorbed by aluminum, 0.01 to 0.02 mm. thick, or glass, 0.5 mm. thick. The β and γ rays penetrate glass, particularly the γ rays; 4 mm. of lead or silver absorb all the β rays; 0.5 mm. of platinum cuts off 75 per cent. of the β rays, and 4 per cent. of the γ rays; alpha and beta rays may produce gamma rays when they strike other bodies; 2 mm. of rubber (0.5 to 4 mm.—Knox) or 5 layers of lint (20 to 30 layers in long exposures—Knox) are probably sufficient, says Phillips, to suppress the secondary rays from the lead.

Alpha rays constitute 64 per cent. of the radiation from radium, beta rays about 24 per cent., and gamma rays 10 per cent.

Radium emanation disintegrates relatively rapidly at first, but after a lapse of six weeks, a state of equilibrium between the formation of emanation from radium and the disintegration of the emanation is reached, that is, the quantity formed per unit of time equals the quantity decayed. The amount of radium emanation in equilibrium with one gram of radium element is termed one curie. One milli-curie equals 2.7 million maché units.

The emanation may be administered therapeutically (1) as an inhalation, alone or combined with oxygen; (2) by mouth, in solution in water, oil, or other liquids; (3) by injection, in solution; and (4) by introduction into the tissues enclosed in tubes, in the same way as radium itself is administered. One should always bear in mind the fact that the emanation is continually undergoing decay, 0.18 of the original amount decaying per day, so that the dose may be progressively increased. The parent radium does not depreciate noticeably.

Radium is usually employed, however, in the form of one of its salts, contained in various forms of applicators (enclosed in gutta-percha, aluminum, celluloid, mica, etc., or fixed in varnish upon the surface of the applicator). The sound skin is protected with lead, 1 to 2 mm. thick. The effect of radium upon the tissues varies with the quantity of radium used, its activity, and the filters employed.

Free radium in platinum tubes 0.2 to 0.5 mm. thick, enclosed in a thin rubber tube, produces a mild, superficial reaction on exposure of one-half to one hour. For a deeper effect, or a surface effect free from reaction, a thicker filter is required and a more prolonged exposure. Where the Beta-rays are practically all cut off, as with a 2 mm. platinum or 4 mm. lead or silver

filter, the exposure must be greatly prolonged (because of the small percentage of Gamma-rays present) even up to twenty-four hours. The skin is affected mostly by the Beta-rays. In long exposures, cover the skin with 20 or 30 layers of lint. An ulcerated surface will bear much longer radiation than the intact skin. (Knox.)

Radium tubes may be sterilized by means of carbolic acid, not by heat.

Ragpicker's Disease.—See Anthrax, in Part 5, Skin Diseases.

Railway-Brain and Railway-Spine.—See Hysteria, and Neurasthenia.

Ranula.—L. *dim.* of *ra'na*, frog. A bluish translucent retention-cyst, occurring beneath the tongue, and due to obstruction and dilatation of the sublingual or of a mucous gland, rarely of the submaxillary gland.

The treatment is excision. If a submaxillary ranula bulges externally it should be removed through an incision below the jaw.

Rapid Heart.—See Tachycardia.

Rat-Bite Fever.—A very rare spirochætal affection (Futaki) due to the bite of a rat, cat, weasel, or ferret, and characterized by an incubation period of about two weeks, followed by inflammation and ulceration of the healed wound, swelling of the regional lymph glands, fever, and an erythematous skin rash, these symptoms subsiding after two to three days, but recurring at five to ten-day intervals for months. The mortality is about 10 per cent.

Treatment.—Cauterize the wound, and treat the constitutional disturbance symptomatically. Salvarsan (see Syphilis) has been found of value. Two or three injections appear to be curative.

Raynaud's Disease.—See Part 5, Skin Diseases.

Rectal and Anal Tumors.—L. *rec'tum*, straight; *L. a'nus; tu'mere*, to swell. **a. Benign Tumors.**—Fibroma; adenoma (single or multiple, sessile or pedunculated), lipoma, angioma, myoma; myxoma; lymphoma; enchondroma; dermoids; papilloma; condyloma or infectious papilloma (flat or pointed, specific or non-specific). A benign pedunculated tumor is called a polypus.

b. Malignant Tumors.—Sarcoma, carcinoma.

Treatment.—For proctoscopic technique see under Enteritis. Rectal polypi should be ligated and removed; the angiotrobe may be used. Sessile tumors should be dissected out. Sigmoidal pedunculated growths may be snared; but sessile tumors in the sigmoid are best removed by transperitoneal sigmoidotomy (Mayo). Colonic polyposis is sometimes curable by ileostomy and rest of the bowel for several months; but sometimes colectomy as far as the lower sigmoid is required.

In inoperable carcinoma, keep the rectum clear by means of daily laxatives and oil enemata. Perform colostomy when required, followed by the systematic administration of codeine or morphine. Schlesinger's analgesic solution (Part 11) is of particular service. Palliative measures include the use of radium tubes (*q.v.*) placed within the stricture, and diathermy (*q.v.*). One hundred mgrms. of radium in a platinum tube 2 mm. thick enclosed in a rubber tube 2 mm. thick may be left in situ for about fifteen hours, and the application repeated in a month.

Rectal Cancer.—See Rectal and Anal Tumors.

Rectal Feeding.—The following is a useful nutrient enema: Two raw eggs, well beaten; three or four ounces of warm milk; twenty grains of sodium bicarbonate; thirty grains of sodium chloride (fifteen grains to each egg); a dessertspoonful of liquor pancreaticus; perhaps a tablespoonful of grape sugar (to obviate acidosis); and, if desired, one or two tablespoonfuls of claret or brandy.

The enema is administered every eight to twelve hours; and the colon irrigated at least once daily with normal saline solution (℥i ad Oi); or the colon may be cleansed one hour before each feeding, and one pint of the saline allowed to remain, in order to prevent or to relieve thirst. After administering the enema, keep the patient in the same position for half an hour, with the anus supported by a pad. If the enema is not retained, five to fifteen drops of laudanum may be added.

The mouth, gums and teeth should be cleansed frequently.

Rectal Inflammation.—See Proctitis.

Prolapse.—See Prolapse of the Rectum and Anus.

Rectal Stricture.—Rectal stricture is the result of chronic proctitis, of whatever cause. The commonest cause is cancer.

Treatment.—Simple stricture may sometimes be cured by the very careful daily use of soft, flexible (Wales) bougies, left in place for from five to ten minutes, and continued for years.

In low stricture, that is, one within five inches of the anal margin, a posterior incision may be made down to the bone, and including the sphincters.

In high stricture, a resection may be done, or an anastomosis established

between the sigmoid and the rectum below the stricture.

For anal stricture, employ various sizes of the olive-shaped, hard-rubber dilator.

For the treatment of inoperable cancer see Rectal and Anal Tumors.

Rectal Tumors.—See Rectal and Anal Tumors.

Ulcer.—See Proctitis.

Rectitis.—See Proctitis.

Red Neuralgia.—See Erythromelalgia, in Part 5, Skin Diseases.

Regurgitation.—See Rumination and Regurgitation.

Relapsing Fever; The Spirilloses.—An acute, infectious, usually epidemic disease, occurring chiefly in Europe, India, and Africa, due to several varieties of spirillum or spirochæte which may be found in the blood, and characterized by an incubation period of from five to seven (to sixteen) days, followed abruptly by chill, fever, headache, general muscular pains, tender enlargement of the liver and spleen, perhaps a roseolar rash becoming petechial, and cough and râles over the base of the lungs, these symptoms terminating in from three to ten days (usually about six days) by crisis and sweating, sometimes diarrhœa, to be followed by a remission of usually about six days, and then by a second febrile attack, and sometimes a third, fourth or even eleventh attack. Jaundice is common. The causal organism is found in the blood only during the febrile period, when it is actively motile. Fig. 65. (See Blood Examination.)

Recovery is the rule. The mortality is about 4 to 15+ per cent.

Etiology.—The disease may be transmitted by ticks, bedbugs, body lice, or mosquitoes. The spirilloses include (1) the tick fevers of East and West Africa, due to the Spirillum duttoni, (2) the tick fever of Colombia, (3) the relapsing fever of Europe, due to the Sp. obermeieri, (4) the recurrent fever of America, due to the Sp. novyi, (5) the recurrent fever of Bombay, due to the Sp. carteri, (6) the recurrent fever of Algeria, due to the Sp. berbera, and (7) the recurrent fever of Tonkin, Indo-China.

Treatment.—Isolate the patient (see Disinfection). Prescribe liquid diet, water freely, hydrotherapy (see Fever), bowel activity, ice-cap for headache, phenacetin, antipyrine, or morphine (see Part 11) for pain; stimulation with aromatic spirits of ammonia, camphor, caffeine or digitalin at the crisis; iron, good food, and fresh air during convalescence. Salvarsan or neosalvarsan is apparently a specific. It is administered intravenously, as in Syphilis, but in smaller doses, since these patients seem peculiarly susceptible to the toxic action of the drug. One dose may suffice.

Quarantine the premises for at least sixteen days; then fumigate the house with formaldehyde and sulphur, etc. See Disinfection.

Renal Abscess.—See Pyelonephritis.

Asthma.—See Bright's Disease, Chronic Interstitial Nephritis.

Calculus.—See Nephrolithiasis.

Colic.—See Nephrolithiasis.

Degeneration, Cystic.—See Genito-Urinary Diseases, Part 3.

Dilatation.—See Hydronephrosis, in Part 3, Genito-Urinary Diseases.

Infarction.—See Part 3, Genito-Urinary Diseases.

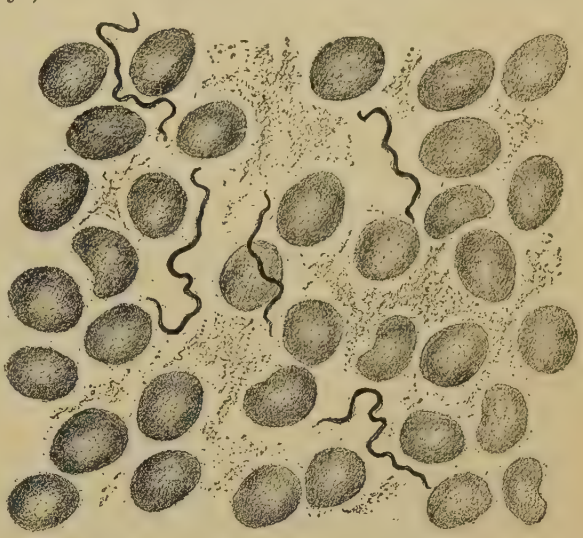


Fig. 65.—The spirochæte of relapsing fever (x 1200).

Inflammation.—See Bright's Disease, and Pyelonephritis.

Stone.—See Nephrolithiasis.

Suppuration.—See Pyelonephritis.

Tuberculosis.—See Pyelonephritis, and Genito-Urinary Diseases, Part 3.

Tumors.—See Genito-Urinary Diseases, Part 3.

Respiration, Artificial.—See under Asphyxia.

Retention of Urine.—See Part 3, Genito-Urinary Diseases.

Retroperitoneal Abscess.—L. *re'tro*, back + peritoneum. The symptoms are apt to be obscure, and to suggest typhoid fever, miliary tuberculosis, or septico-pyæmia. Deep abdominal tenderness may be present.

The abscess may point in the lumbar or the iliac region.

Etiology.—Traumatism, especially in the kidney region; intestinal perforation, due to traumatism, ulceration, malignancy, a foreign body, etc.; infection from the intact intestine; operative infection; appendicitis; salpingitis; rupture of an hepatic or splenic abscess; spinal, pelvic, or costal caries (see Pott's Disease, in Part 10, Orthopædics); renal stone; renal suppuration (see Pyelonephritis); renal tuberculosis.

Treatment of Non-Tuberculous Cases.—If the application of large hot poultices to the lumbar region is not sufficient, make a free incision in this region, or wherever the abscess points.

Retropharyngeal Abscess.—See Part 9, Throat Diseases.

Rhachitis.—See Rickets.

Rheumatic Fever; Acute Articular or Inflammatory Rheumatism.—Gr. ῥευματισμός from ῥεῦμα flux. An acute infectious disease, caused probably by several varieties of streptococcus, and characterized by polyarthritis, irregular pyrexia, sour sweating, perhaps sudamina and erythema, sometimes subcutaneous nodules, anæmia, prostration, and a tendency to valvular endocarditis. The onset is usually abrupt, often with sore throat; but it may be insidious, especially in children, and preceded by headache, lassitude, sore throat, anæmia, epistaxis, and fleeting joint pains. In some cases in children, joint symptoms may be scarcely noticeable. Often only one joint is affected.

The acute form lasts from three to six weeks or longer, and usually terminates in recovery; but relapses may occur. The subacute or chronic form may last even as long as eighteen months. One attack strongly predisposes to subsequent attacks.

The complications most to be feared are hyperpyrexia, which is rare, but very fatal, and acute carditis (endo-, myo-, and peri-). Pleurisy and pneumonia may occur.

Exclude (1) multiple arthritis secondary to gonorrhœa, septico-pyæmia, tonsillitis, scarlet fever, dysentery, and cerebrospinal meningitis; (2) acute epiphysitis or osteomyelitis; (3) acute arthritis deformans; (4) gout; (5) scurvy in infants. Subcutaneous nodules occur in migraine, gout, and in arthritis deformans, as well as in rheumatic fever.

Etiology.—The disease is probably due to several varieties of streptococcus. Heredity, cold, dampness, fatigue, insufficient food, bad hygiene, and the excessive consumption of sugar and red meat (Kerley) may have some causal influence.

Treatment.—Enjoin absolute rest in bed (including the use of the bed-pan, urinal, and goose-neck feeding cup) in a well-ventilated room free from draughts, with a temperature of 60° to 62° F. A flannel nightgown should be worn, and changed frequently, the skin being bathed each time with sodium bicarbonate solution, 1 per cent., dried thoroughly and dusted with a bland powder. The patient should lie between blankets; or, perhaps better, as advised by Yeo, on a soft, thin blanket and covered by a cotton sheet. The bed clothing may be kept off the tender joints by means of a cage or cradle.

The diet should be liquid as long as there is fever: milk, two quarts in twenty-four hours, diluted one-third with barley water, oatmeal water, soda water, Vichy, or Apollinaris; whey; milk soups; thin cereal gruels well cooked in milk; orange juice; ice-cream; rice, barley, or oatmeal water or cream of tartar lemonade (Part 11) freely; as little sugar as possible. Open the bowels in the beginning with calomel followed by a saline (see Part 11 for all drugs).

Prescribe an antiseptic gargle for sore throat, *e.g.*, Dobell's solution (Part 11) or the following: one teaspoonful boric acid, one-half teaspoonful sugar, and 30 to 40 drops carbolic acid in eight ounces of hot water.

Wrap the affected joints in warm cotton-batting, and employ one of the following local measures several times a day:

1. Gentle rubbing with oil of wintergreen, or chloroform liniment, or belladonna liniment containing tr. opii, ℥i to the pint.

2. Compresses wet with Fuller's warm alkaline lotion: sod. carb., ℥vi, tr. opii, ℥i, glycerine, ℥ii, water ℥ix; covered with oiled silk.

3. Alcohol compresses covered with rubber tissue and changed every twelve hours.

4. Guaiacol and glycerine, aa 10 to 60 minims.

5. Unguentum mentholis vel camphoræ, 10 to 15 per cent.

6. Hot applications, or dry hot air.

If the pain is very severe, immobilize the joint by means of a padded splint, or a split plaster or starch cast.

Render the urine alkaline as soon as possible, and keep it so by means of citrate or acetate of potassium, or bicarbonate of sodium, gr. xv–xxx in lemonade, every two or three hours, or less often as required. The citrate or acetate is preferable to carbonates because less disturbing to the digestion.

℞ Sodii salicylatis.... ʒiv (gr. xv per dose)
Sodii vel potassii bicarbonatis..... ʒss–i (gr. xv–xxx per dose)
Aquæ, q.s. ad..... ʒxii

M. Sig.—Six drams, well diluted, every 2–3–4 hours, until pain is relieved, then every 4–5 hours until the temperature begins to fall. (The bicarbonate is added to prevent salicylic acidosis.) Should toxic symptoms appear (see below), stop the drug, and resume later in smaller doses. To prevent a recurrence of the inflammatory symptoms, give gr. xv–xx, t.i.d., for at least two or three weeks after the acute attack has subsided.

For children of 2 to 3 years, give 12 to 15 grs. each of sod. salicylate and sod. bicarb. daily; 5 years, 20 grs. of each daily; 8 to 10 years, 30 grs. of each daily. After recovery give, for six months, 10 grs. each of sod. salicyl. and sod. bicarb. daily for five days out of every fifteen; and thereafter for five days out of every month. (Kerley.)

The following drugs are sometimes used in place of sodium salicylate:

(a) Aspirin or acetyl salicylic acid, in the same dosage as sod. salicylate. It should not be combined with an alkali which decomposes it into salicylic acid. It disturbs the stomach less than sod. salicylate.

(b) Salicin, a glucoside, dosage twice that of sod. salicyl.: gr. xx in capsule, every hour, or gr. xxx every two to three hours. It is less depressing than sod. salicyl., and is therefore recommended for children and the delicate.

(c) Oil of gaultheria or wintergreen (methyl salicylate), ♏xx, in milk every two hours.

It must be borne in mind that the salicylates are heart depressants. Toxic symptoms are: general depression, small, sometimes irregular or slow pulse, dyspnœa, nausea, vomiting, deafness, tinnitus, headache, dizziness, delirium, irritation of the kidneys.

For hyperpyrexia, employ the ice-cap and cold sponging or cold packs, or immerse the patient in a cold bath, beginning with a temperature of about 85° F., and rapidly cool with ice until the fever drops to 102° F. Remove the patient at once if collapse threatens.

Administer strychnine, camphor or aromatic spirits of ammonia for circulatory weakness.

The occurrence of cardiac complications demands absolute rest, a very light diet, an ice-bag to the precordium, and, perhaps, small blisters (see Cantharides in Part 11) along the course of the third, fourth, fifth, and sixth intercostal nerves.

In protracted cases of joint involvement employ counter-irritation: the Paquelin cautery lightly; or ichthyol, 10 to 25 per cent. in glycerine or oil; or dry hot air.

During convalescence keep the patient in bed for several weeks (about six weeks if the heart is affected: see Endocarditis), Prescribe a tonic of iron, quinine, and strychnine elixir, one teaspoonful well-diluted t.i.d.p.c., and a nutritious diet: milk, milk soups, junket, well-cooked cereal gruels, puddings, stale bread, crackers or zwieback, butter, cream, potatoes baked in their skins (to retain potassium salts), green vegetables, fish, fowl, eggs, fresh or stewed fruit.

Avoid constipation.

T. McCrae says that if permanent joint changes follow the subsidence of acute symptoms, the case is one of acute arthritis deformans (*q.v.*), instead of rheumatic fever (but the distinction may be immaterial).

In chronic cases, search for a focus of infection, *e.g.*, in the tonsils, peritonsillar tissues, teeth, dental alveoli, nasopharynx, sinuses, bronchial tubes, bronchiectatic cavities, colon, gall-bladder, appendix, Fallopian tubes, seminal vesicles, prostate, etc.

Autogenous vaccines, obtained from the pharynx, nose, urine, etc., give good results in chronic cases (Greeley); but are contraindicated in acute cases with acute joint swelling, pain, and elevation of temperature. One hundred million to two hundred million killed organisms (streptococci) are injected every five days.

Rheumatism, Acute Articular.—See Rheumatic Fever.

Chronic Articular.—See Rheumatic Fever; and Arthritis Deformans (Part 10).

Muscular.—See Myalgia.

Rheumatoid Arthritis.—Gr. ῥεῦμα flux + εἶδος form; ἄρθρον joint + -ιτις inflammation. See Arthritis Deformans. (Part 10).

Rhinitis.—See Part 8, Nose Diseases.

Rhinoscleroma.—See Part 8, Nose Diseases.

Rickets; Rhachitis.—Gr. ῥάχις spine + -ιτις inflammation. A chronic nutritional disorder of infants, appearing usually between the ages of three months and two years, associated with a deficiency of calcium in the bones, due to a deficiency of fat and protein in the diet (?), especially fat (?), or to deficient absorption of these food elements(?), and manifested by the following symptomatology, viz., insidious onset, head sweating, irritability and sleeplessness; flatulence and constipation; anæmia; usually enlargement of the spleen; pot-belly; diffuse soreness of the body; muscular flabbiness and weakness,

with resulting head nodding, nystagmus, backward bowing of the spine and inability to walk at the usual age (about sixteen months); delayed dentition; large square head; prominent or protruding sternum (pigeon breast); transverse constriction below the level of the nipples, due to traction of the diaphragm (Harrison's groove); beading of the ribs at their junction with the costal cartilages (rickety rosary); delayed closure of the anterior fontanelle (it should measure ¾ to 1 inch in both diameters at the end of twelve months, and should close about the eighteenth month); enlargement of the epiphyses of the long bones; bending of the bones; localized areas of thinning of the cranium (craniotabes, from L. *cra'nium*, skull, + *ta'bes*, wasting); tendency to bone fracture; tendency to laryngismus stridulus, spasmophilia or tetany, convulsions, bronchitis, and bronchopneumonia.

Rickets sometimes occurs congenitally when the mother is ill during pregnancy. In very rare instances it is said to appear or reappear after four years of age, usually between the ages of nine and fourteen years (late rickets).

Wachenheim defines rickets as a "manifestation of calcium and phosphorus starvation, caused by the imperfect absorption of the fats from cow's milk." It may possibly have something to do with a deficiency of vitamines or of some internal secretion.

Etiology.—A deficiency of fat and protein in the diet, particularly the former; an excess of carbohydrate food, causing indigestion and thereby interfering with the digestion and absorption of fat; other causes of impaired digestion, *e.g.*, congenital feebleness, gastro-intestinal disorders, prolonged suckling, suckling during pregnancy, too strong cow's milk, syphilis, tuberculosis, nephritis, etc., in the mother or child; bad hygiene, *i.e.*, overcrowding, dampness, lack of fresh air, sunlight, and exercise.

Prognosis.—The disease is readily cured in about three to five months.

Treatment.—Enjoin, first of all, fresh air day and night, sunlight, a daily morning warm bath in a warm room, followed by a cool douche, daily massage of the muscles and abdomen, and manipulation of the limbs and back to correct deformity (with the child lying prone, raise the legs and buttocks slowly and repeatedly, while pressing upon the spine), and oil inunctions at bedtime, using lard, goose-grease, or cacao butter, with at least ten minutes' rubbing. The patient should be kept in a reclining posture and not allowed to sit, stand, or walk for from several weeks to three months after beginning treatment.

The patient should be fed according to the principles described under Infant Feeding. Breast milk up to the eleventh month is best. If artificial feeding is required, the milk should be carefully modified, and not sterilized, and barley water had better be omitted. During the second year employ the dietary given under Feeding During the Second Year, under Infant Feeding. Give at this period no less than 1½ pints of fresh milk daily, to which may be added fresh raw meat juice, 1½ to 3 ounces, obtained as follows: four parts of finely chopped steak is stirred with one part of cold water, allowed to stand for half an hour in the cold, and the juice then expressed through a cloth or meat press. Allow no potatoes until the eighteenth month, and then sparingly (best cooked in their skins) mashed with milk; no sweets, cakes, buns, biscuits, or other carbohydrate food in excess; toast and stale bread in moderation. Oatmeal and wheat gruels are allowed; also soft-boiled eggs (boiled three minutes) and scraped beef. Orange juice, 2 to 4 ounces, should be given daily. After the second year add purées of beans and peas, and butter in abundance.

The deficiency of fat, if such there is, may be supplied by means of cream, cod-liver oil, olive oil, cottonseed oil, or egg yolk (20 to 30 per cent. fat; one-half a yolk at nine months, one whole yolk at ten to eleven months, very lightly boiled, as it is indigestible raw).

Dosage of the oils:

Six months, 15 minims, t.i.d.p.c.
Twelve months, 20 minims, t.i.d.p.c.
Eighteen to twenty-four months, 25–30 minims, t.i.d.p.c.

The oil may be given plain, or in the form of a 50 per cent. emulsion, or in combination with malt extract, 1 : 4. If it causes diarrhœa, it may be emulsified with an equal quantity of lime-water.

If craniotabes, or nervous hyperirritability is present (*e.g.*, contraction of the facial or other muscles on lightly tapping the superficial branches of their nerves; tetany; laryngismus stridulus), or in the absence of these symptoms, add phosphorus to the oil, gr. $\frac{1}{200}$ t.i.d.; and to prevent the occurrence of convulsions, prescribe bromide or chloral (see Drugs, Part 11), of the latter gr. iii–v per rectum every three hours, to a child of one year.

For anæmia, prescribe saccharated oxide of iron or eisenzucker, gr. iii, t.i.d., to a baby

a year old, or arsenic. As a tonic, some prescribe the syrup of the lactophosphate of lime, or syrup of hypophosphites.

For diarrhœa, Yeo prescribes an occasional dose of gray powder, followed by calcium carbonate and bismuth salicylate.

For the correction of deformities, employ massage, manipulation, and braces (see Part 10, Orthopædics). Operative measures, such as subperiosteal osteotomy or osteoclasis should not be resorted to until the fifth year of age.

Rickets, Fetal.—See Achondroplasia.

Rock Fever.—See Mediterranean Fever.

Rocky Mountain Spotted Fever; Tick Fever.—An acute infectious, often fatal disease, confined to the Bitter Root Valley of Montana and the neighboring mountainous parts of Idaho, Wyoming, Nevada, and Oregon, transmitted by the wood-tick and appearing with the latter in the spring and early summer, and characterized by an incubation period of three to ten days, followed abruptly with chill, headache, and severe pains in the limbs, a continued fever, jaundice, perhaps nose-bleed, and after from two to seven days, the appearance, first on the ankles and wrists and later over the entire body, of a macular eruption becoming hemorrhagic. Convalescence begins about the fourth week and is slow. Desquamation occurs with convalescence. One attack confers immunity.

Whether the disease is due to Wilson and Chowning's piroplasma hominis, or to Rickett's bacillus, or to neither, is still unsettled.

It is probably a variety of typhus fever.

Treatment.—Put the patient to bed in a quiet, darkened room, on liquid diet, with plenty of water in the form of cream of tartar lemonade (Part 11, *q.v.* for all drugs). Keep the bowels active by means of calomel, salines, and enemas. The mouth should be kept clean by swabbing the tongue, cheeks, teeth, and gums, every four hours, with a mixture of glycerine, ℥iv, boric acid, ℥i carbolic acid, ♏xx, and water to ℥iv; or with glycerine and peppermint water, of each ℥i, with the juice of a lemon added. A cotton stick or cotton or gauze sponge held with hæmostatic forceps may be used for the purpose. Guard against bed-sores (*q.v.*). Employ cool sponging or packs for fever or nervous symptoms (see Fever). Subcutaneous saline infusions are recommended in severe cases. Give stimulants as required, *e.g.*, camphor, strychnine, caffeine, digitalin, aromatic spirits of ammonia.

Quinine is recommended in large and continuous doses: gr. xv every four hours by mouth, or preferably, gr. xv of the bimuriate hypodermically every six hours (see under Malaria), gradually decreased as convalescence sets in.

Calcium sulphide and creosote are also considered by some to be of value.

When bitten by a tick, the latter should be removed after first killing it with kerosene or turpentine, and the wound should be thoroughly cauterized with carbolic acid.

Rodent Ulcer.—See Carcinoma Cutis in Skin Diseases, Part 5.

Röntgenology.—The passage of an electric current through a glass tube of low vacuum (Geissler tube, which transmits electric currents more readily than air) produces a faint glow which varies in intensity with the degree of vacuum. In tubes of very high vacuum (Crookes tube, which offers great resistance to the passage of the current) this glow is replaced by a greenish fluorescence. This phenomenon is due to a stream of discharge, believed to be composed of negatively electrified molecules, from the cathode—cathode rays—which, by impact upon any solid body, produce X-rays or Röntgen rays. Cathode rays are deflected by a magnet; they produce fluorescence and phosphorescence in certain substances; they affect photographic plates like ordinary light; they exert no known effect upon the bodily tissues. X-rays are not deflected by a magnet; they produce fluorescence and phosphorescence in certain substances; they affect photographic plates like ordinary light; they travel in straight lines and cannot be reflected or refracted (except only by the atomically smooth surface of the cleavage planes in crystals, the X-rays being of such short wave length); they pass through all known substances with varying degrees of intensity; they cause the air to become a conductor and consequently cause the discharge of electrically charged bodies; they exert marked effects upon the bodily tissues. (Quoted chiefly from Christie).

Fig. 66 represents the ordinary type of X-ray or focus tube; 1 is the cathode, made of aluminum (because aluminum does not disintegrate and discolor the walls of the tube) and concave or cup-shaped so as to focus the cathode rays upon the obliquely (45°) placed target or anti-cathode, 2, which is made of platinum, or better, tungsten, because of the high fusion or melting point of these metals. The target is usually surrounded by a good conductor of heat, such as copper, sometimes a water or air jacket. It is often placed just beyond the focus point of the cathode, as an additional

precaution against fusion. It is placed obliquely in order to throw the X-rays out at one side. Three is the anode, and 4 the accessory anode, made of aluminum. The accessory anode is added in order to prevent too rapid an increase of resistance in the vacuum tube, caused by a progressive increase in the vacuum. Five is the vacuum regulator, consisting of an accessory bulb, containing, say, asbestos or mica, and provided with the adjustable wire, 6. When the current sparks across from the cathode to the adjustable wire, air is thereby forced out of the interstices of the asbestos and the vacuum consequently lowered. Seven is the X-ray hemisphere. The green fluorescence presented by this hemisphere, however, is due to the impact of reflected cathode rays, as shown by the action of a magnet on the boundary of the fluorescence. X-rays do not make glass fluorescent.

Secondary rays, called also Sagnac rays, are rays which are given off in all directions when the X-rays strike an object. They may cause blurring of the radiogram. Indirect rays are those rays given off from the target other than at right angles, and are useless for radiography. Both the secondary and indirect rays may be largely eliminated by means of a cylinder diaphragm with circular aperture.

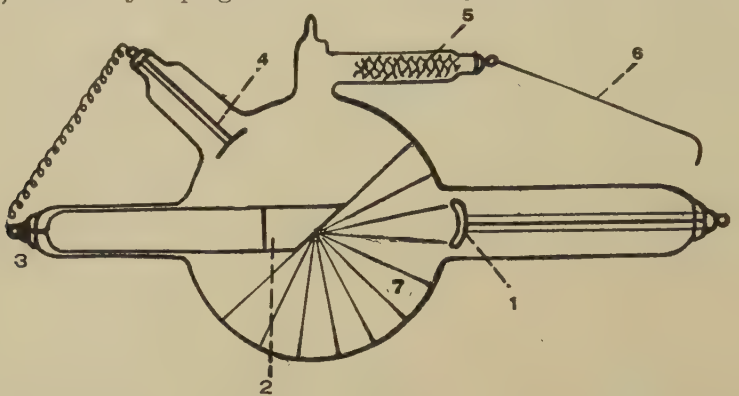


Fig. 66.—Röntgen ray or focus tube. 1, cathode; 2, target; 3, anode; 4, accessory anode; 5, vacuum regulator; 6, adjustable wire; 7, X-ray hemisphere.

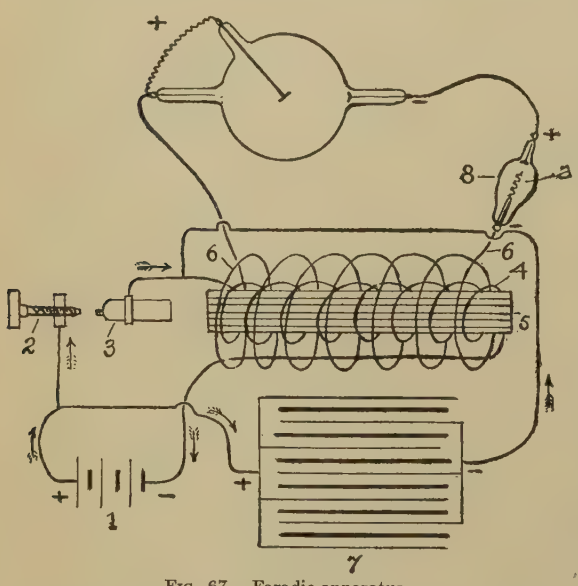


Fig. 67.—Faradic apparatus.

A current of high potential (high electromotive force or voltage) is required to overcome the resistance of the high vacuum tubes used to produce X-rays. Such a current is supplied by a static machine, or better, an induction coil (see Medical Electricity), or better still, a high-potential transformer, which is in principle an induction coil, but does not require an interrupter other than the dynamo from which the alternating current supply is obtained.

Fig. 67 represents the plan and connections of an induction coil apparatus.

One is the storage battery (other forms of battery are practically never used) or main from which the current is derived; 2 is an adjustable screw with a platinum tip; 3 is a piece of soft iron, also with a platinum tip opposite the screw, which is drawn against 2 by means of a stout brass spring; 4 is the primary coil surrounding the iron core, 5; 6 is the secondary coil; 7 is the condenser, the thin lines representing leaves of tin-foil, the thick lines representing insulating partitions of waxed or varnished paper; 8 is a valve tube interposed in the secondary circuit for the purpose of permitting only a unidirectional current (the strong break current) to enter the X-ray tube (a is a spiral of aluminum presenting a large surface which transmits currents readily when it is

the negative pole, but not when it is the anode).

The current from the battery or mains passes in the direction indicated by the arrows and magnetizes the soft iron core, 5, which attracts the iron hammer, 3, away from its contact with the screw, 2, and thus breaks the circuit. The core thereby becoming demagnetized, 3 springs back into contact with 2, and remakes the circuit, and so on. When the circuit is broken, the current passes into the condenser, 7, which greatly increases the suddenness of the break and reduces the sparking.

The vibrating interrupter above described is the slowest and least desirable form of interrupter. More rapid are the mercury interrupters (dipper, rotary, or jet, operated by a motor), and most rapid and therefore best of all, giving the strongest currents, the electrolytic interrupters (Wehnelt or Caldwell-Simon). The Wehnelt interrupter consists of a tank of sulphuric acid diluted with six times as much water, in which are immersed a very slender platinum (positive) electrode enclosed in a porcelain sheath, and a large lead electrode. During the passage of the current the platinum electrode becomes covered with a thin layer of gas which stops the flow of the current. As soon as the current stops, the gas disappears and the current again flows. The deeper the platinum is inserted into the liquid, the less rapid the impulses. In the Caldwell-Simon interrupter, both electrodes are large lead ones, separated by a perforated partition, the small holes of which become obstructed with bubbles of vapor when the current passes, which causes the break.

If an alternating instead of a direct current is used to operate the primary coil, it must first be rendered unidirectional. This is usually accomplished by means of the aluminum cell rectifier shown in Fig. 68. In this drawing, 1, 1, 1, 1 are four glass jars each containing a solution of Rochelle salts (water 1 part, saturated solution of Rochelle salts 1 part) and a lead and an aluminum plate, marked L and A respectively. "The current flows readily so long as it is passing from the lead through the solution to the aluminum, but not in the opposite direction, polarization preventing the flow in one direction while offering little obstruction to its passage in the other." (Christie.)

Fig. 69 shows the connections of a high-tension transformer or so-called interrupterless apparatus, operating on an alternating current (preferably one of 220 volts—Christie).

The main alternating current from the power house dynamo flows directly through the rheostat, A, and primary of the transformer, B. After this current has been turned on, the starting motor, C, is included in the circuit by closing the switch at D. When this motor has reached its maximum speed, the switch at E, to the synchronous motor, F, is closed. These two motors serve to revolve the rectifying disc, G (a mica disc on which are mounted two metal strips, m, m); and since the disc at its maximum speed revolves at the same rate as that of the dynamo in the power house which

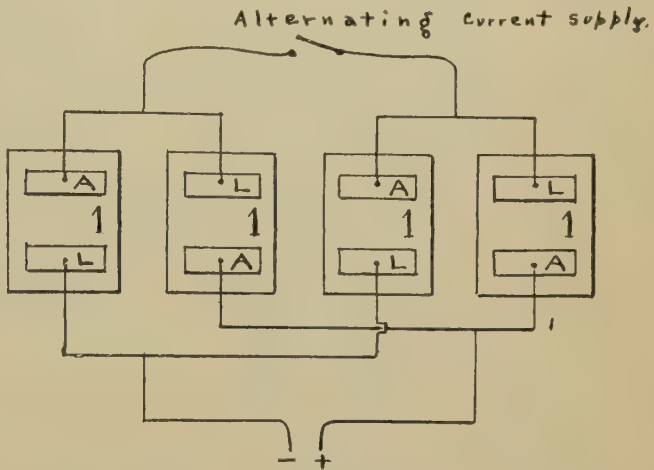


Fig. 68.—Aluminum cell rectifier (from Christie's *Manual of X-Ray Technic*).

supplies the electrical energy, the revolutions are exactly synchronous with the alternations of the current in the secondary of the transformer. The purpose of the rectifier is to render the current from the transformer unidirectional. In the position shown in the diagram, the terminal, a, is positive, and b negative, and the current flows in the direction of the arrows. The next phase of the current, making the terminal, b, positive, and a negative, finds the synchronously revolving disc, G, advanced one-quarter of a revolution to the position shown in Fig. 70, in which the current takes the course indicated by the arrows. Thus a unidirectional current for the X-ray tube is ensured.

The rheostat or resistance appliance, A, consists of a number of coils of usually German-silver wire, which is a poor conductor of electricity. With the movable arm, c, in the position shown in Fig. 69, all the resistance coils are in the circuit, and the current is at its lowest strength. As

the movable arm is shifted successively to the contact points, 2, 3, and 4, successive coils are eliminated from the circuit, and the current correspondingly increased, until the contact point, 4, is reached, when all the resistance is cut out and the current is at its maximum.

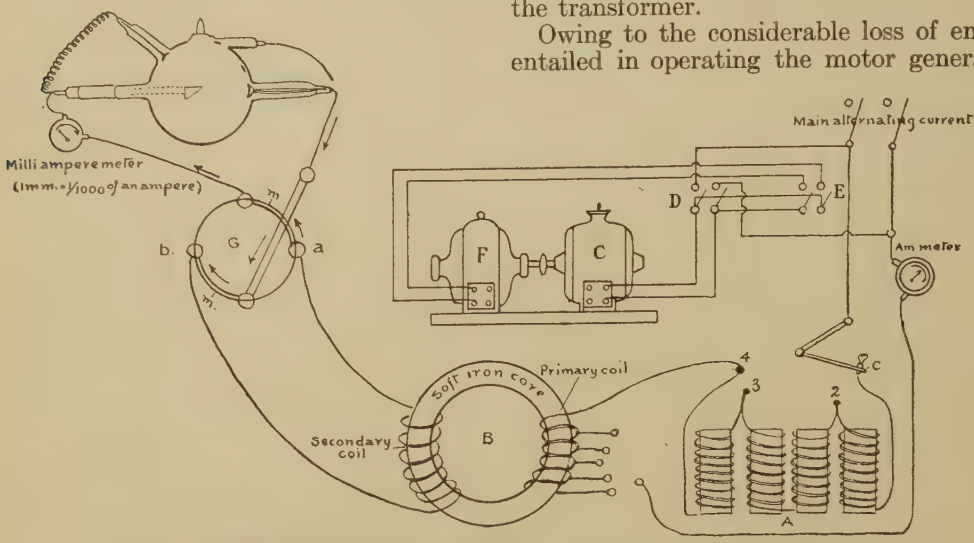


Fig. 69.—Connections of a high-tension transformer operating on an alternating current.

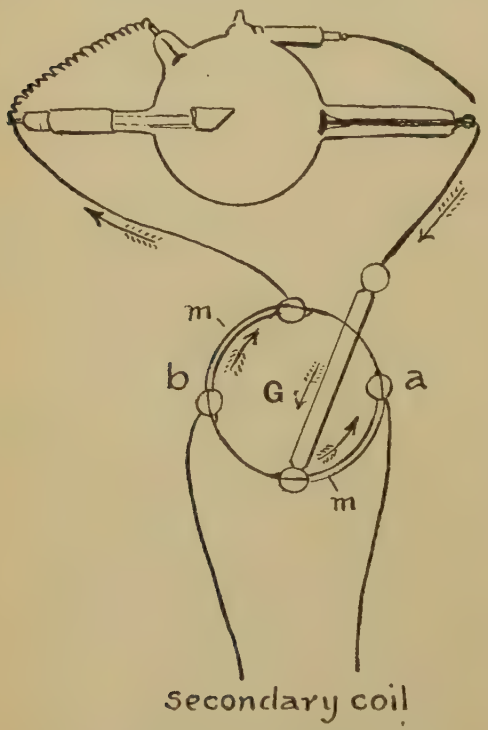


Fig. 70.—Rectifying disc G, and connections.

Fig. 71 shows the connections of a high-tension transformer operating on a direct current, which must first be changed to an alternating current by a motor generator before it can be used to excite the transformer.

Owing to the considerable loss of energy entailed in operating the motor generator, an alternating current supply is to be preferred to the direct.

X-Ray Technique.—The X-ray tube should be carefully dusted and dried before using, and in cold weather it should be warmed. The supporting clamp should grip the cathode neck lightly, below the level of the concave cathode, this being the strongest part. The exciting electrical apparatus should be at least six or seven feet away, in order to avoid the deflecting action of the magnetic field upon the cathodal stream. The regulating wire should as a rule be placed six or seven inches away from the cathode, and all loose wires or metal fittings should be quite clear of the tube. The current should be turned on gradually, by means of a rheostat, "until the tube fluoresces brightly and steadily." "If the tube is inclined to spark over, bring the regulator (by means of a piece of wood, glass, or other non-conductor) to within a distance of four or five inches of the cathode, so as to provide a kind of safety-valve action," and also reduce the vacuum of the tube, when the sparking will cease; then remove the regulating rod, and cautiously test the tube again (Knox). If the tube is of too high vacuum to allow the current to pass when the latter is at its full strength, the current sparks across between the positive and negative terminals of the exciting induction coil or transformer, the length of the spark being a measure of the resistance of the tube. When this occurs, one should place

the end of the adjustable wire about two inches from the cathode (never touching it), and allow the weakest current possible to spark across to the regulator. "The wire is then moved to a distance of five or six inches from the cathode and the current turned on to its full strength. This process is repeated until the tube lights up properly and there is no sparking at the parallel spark gap. Great care must be exercised in lowering the vacuum; if a strong current is used it will cause a thick yellow spark to jump across and probably destroy the vacuum." (Christie). The vacuum and therefore the resistance of the tube increase with use. New tubes should be used cautiously until they become seasoned; *i.e.*, use weak currents or very short exposures with strong currents. Overheating by too prolonged use should be avoided. "Hardening by means of reversing the current," warns Knox, "is a method which should never be resorted to." With care a tube should be good for hundreds of exposures. Says Christie, "When a new tube is received it is usually found to be of relatively low vacuum, but after being used a few times it reaches its point of maximum usefulness. The vacuum then seems to remain about stationary for some time and then gradually increases until it reaches a point where it must be lowered every time it is used. Finally the vacuum becomes so high that it can no longer be lowered sufficiently to allow the current to pass." "When new tubes are ordered it is necessary to specify whether they are to be used with a coil or a transformer, since tubes pumped for use with a coil are of too high vacuum for use with a transformer."

A tube of high vacuum is termed "hard"; a tube of low vacuum "soft." The penetrative power or intensity of the X-rays increases with the degree of vacuum or hardness of the tube and with the strength of the current. In a normal tube, there is a well-marked hemisphere of greenish fluorescence in front of the target, while the remainder of the tube is dark, with the exception of a faint blue cloud in the region of the anode. In a soft tube, the faint blue cloud is increased, and a blue line appears extending from the cathode to the target. In a hard tube, the faint blue cloud is absent. A long spark-gap together with a high milliampère-meter reading (not the latter alone) indicates a high penetrative power. More precise methods of estimating the penetrative power of the X-rays are by means of the Bauer qualimeter, and the Walter, Benoist, and Wehnelt radiometers. The following table from Knox gives the comparative values or readings of these instruments:

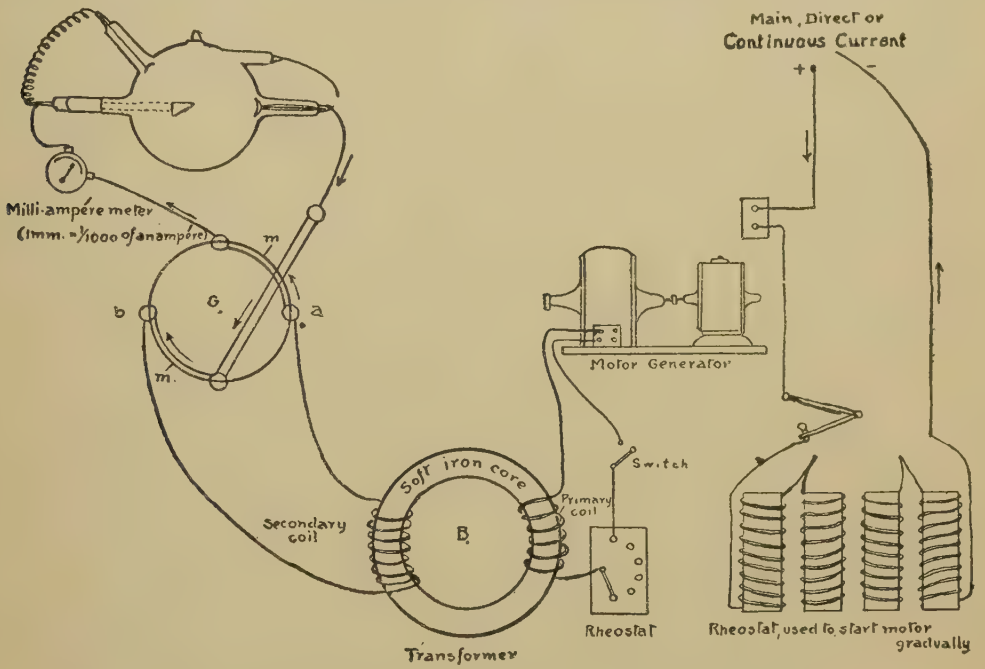


FIG. 71.—Connections of a high-tension transformer operating on a direct current.

COMPARATIVE READINGS OF VARIOUS INSTRUMENTS FOR MEASURING THE HARDNESS OF TUBES

	Soft				Medium				Hard	
Bauer.....	1	2	3	4	5	6	7	8	9	10
Wehnelt...	1.5	3	4.5	6	7.5	9	10.5	12	13.5	15
Walter....	1	1–2	2–3	3–4	4–5	5–6	6–7	7–8		
Benoist...	1	2	3	4	5	6	7	8	9	10

If inverse or reverse currents enter the X-ray tube, the greenish hemisphere loses its clear cut appearance and irregular green rings appear behind the target. If the polarity is completely reversed, the green hemisphere disappears, and a bright spot is observed on the glass wall opposite the target. The presence of inverse currents is best demonstrated by means of the oscilloscope. It consists of an oblong glass vacuum tube enclosing two aluminum wires separated by a small gap. If the current is unidirectional, the wire connected with the negative pole shows a violet fluorescence, while if each wire is alternately negative and positive, both wires become fluorescent. The continued presence of inverse currents gradually hardens the tube.

In order to determine which terminal is positive and which negative, (1) immerse them in water, when bubbles will arise from the negative pole; or (2) immerse them in a solution of potassium iodide, when the solution will turn red around the negative pole due to the liberation of free iodine by ionization; or (3) apply wet blue litmus paper to the terminals, when it will become red in contact with the positive pole. Then, too, the spark at the negative pole is thick and white, while that at the positive pole is thin and wiry.

The Coolidge tube is markedly different in construction and operation from the older types of X-ray tube. The cathode consists of a spiral of tungsten wire surrounded by a sleeve of molybdenum to focus the cathode stream. The anticathode is of tungsten. The positive and negative terminals of the tube are connected as in the ordinary tube, but there is also connected to the cathode spiral a small accumulator battery (thoroughly insulated from the patient and from the earth) with an ammeter in circuit (see Fig. 72). The tube has a vacuum 1000 times greater than the ordinary tube, and

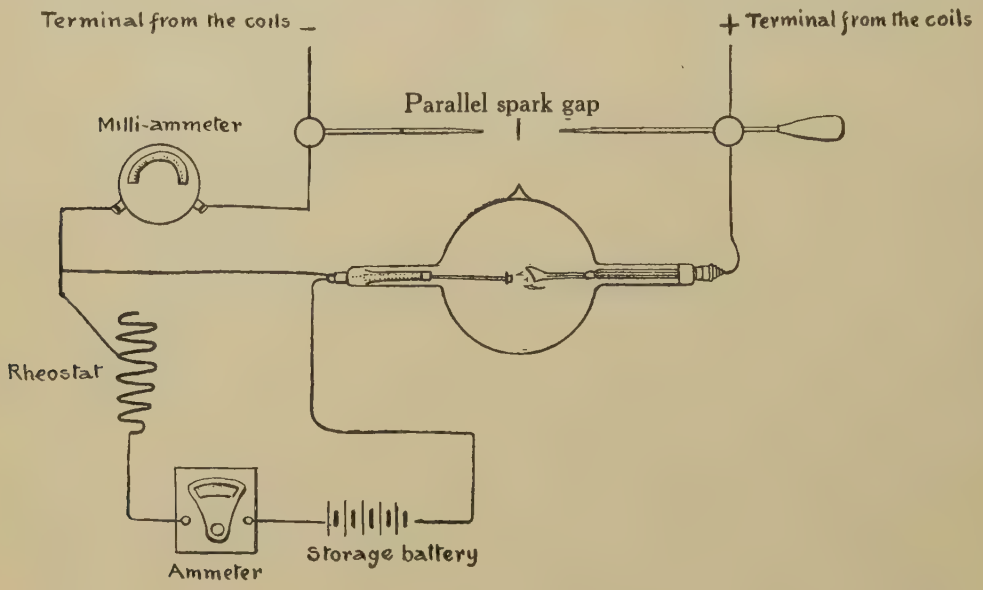


FIG. 72.—Connections of a Coolidge tube.

therefore can not be excited in the ordinary way, owing to the insurmountable resistance which it offers. The cathode is heated by means of the battery which causes it to give off a stream of negatively charged electrons which are projected on to the anti-cathode. The number of these discharged electrons (which determines the quantity of the X-rays produced), depends upon the temperature of the tungsten spiral; and their speed (which determines the penetrative power of the X-rays) depends upon the potential at the terminals of the tube. The Coolidge tube gives little or no visible sign of fluorescence, and requires great precaution against the production of X-ray burns.

The Coolidge tube furnishes at will any quantity of rays and any desired degree of penetration. Inverse radiation cannot oc-

cur. If the polarity of the current is reversed, the milliameter will register no current. In operating the tube, first close the battery circuit, and obtain a current of between 3 and 5 ampères by shifting the rheostat handle; then close the circuit from the coils. The voltage used to run the tube should not be made to back up more than a 10-inch parallel-gap, to avoid puncture. About 6 milliampères with a spark gap of 9 inches is the average used for deep penetration. When the target becomes intensely heated, the tube offers slightly less resistance, so that a little adjustment of the battery rheostat should then be made.

Various tube-stands, lead-lined boxes, couches, compressors (to keep the patient as quiet as possible) and screening stands are important X-ray appurtenances.

Radiography.—X-ray plates should be kept unwrapped in a lead-lined box (as a precaution against radiations), in a cool dry place.

To take a radiogram, place the plate first in a black envelope and then in an orange envelope in a dark room illuminated only by a ruby light. The film or dull side of the plate should be placed facing the side of the envelope opposite the flaps (not facing the flaps). A plate-holder may be used instead of the envelopes. The plate is taken to the X-ray room in a lead-lined box, to protect it, if need be, against the X-rays, and is placed under the patient with its centre beneath the centre of the part to be radiographed. "The target of the tube is then centred over the centre of the plate at a distance of 18 to 25 inches from the plate." (Christie.)

Considerable latitude (two to thirty seconds) is allowable in the time of exposure, which depends upon the penetrative power of the rays, the strength of the current, the distance of the tube from the plate, the thickness of the part to be radiographed, and the sensitiveness or rapidity of the plate. The use of an intensifying screen materially shortens the time of exposure but gives less detail in the picture. An intensifying screen consists of a surface coated with some fluorescent material, such as calcium tungstate. It should first be carefully dusted with a wide camel's-hair brush, and placed snugly in contact with the film side of the plate.

After exposure, the plate is taken to the dark room, removed from its envelopes or plate-holder, and slid rapidly, film upward, into a tray containing, say, the following developing solution, which should be at a temperature of about 65° to 68° F.:

No. 1

Hydroquinone	6 gm.	(reducer)
Sodium sulphite	50 gm.	(preservative, taking up oxygen and thus preventing oxidation of the reducer.)
Water	500 c.c.	

No. 2

Potassium carbonate	100 gm.	(accelerator)
Potassium bromide	1.5 gm.	(restrainer)
Water	500 c.c.	

For use, mix equal parts of No. 1 and No. 2.

When using the following metol-hydroquinone developer, which should be made fresh each day, the temperature should be 60° F.:

Metol, 20 grs., thoroughly dissolved in 8 oz. pure warm water;
Hydroquinone, 80 grs., then added;
Sodium sulphite (crystals), 2 oz.
Sodium carbonate (crystals), 2 oz.
Potassium bromide solution, 10 per cent., 80 minims
} dissolved in 8 oz. warm water and mixed with the above
Water then added up to 20 oz., and the solution allowed to cool to 60 F.

Other reducing agents are pyrogallic acid, amidol, eikonogen, ortal, rodinal, etc.

During the developing process, the tray should be covered as much as possible and it should be rocked so as to remove air bubbles from the surface of the plate. As soon as the back of the plate, when held up to the ruby light, presents an even black appearance, development is considered complete, and the plate is washed in running water for thirty seconds. It is then placed in the following fixing solution, and kept there for about fifteen minutes after all the dull white film has dissolved away, when it is washed for at least an hour in running water:

No. 1.	Sodium hyposulphite	1000 gm.
	Water	4000 c.c.
No. 2.	Water	1000 c.c.
	Sodium sulphite, dry	90 gm.
	Sulphuric acid	15 c.c.
	Chrome alum, powdered	60 gm.

Mix No. 2 in the above sequence, and pour into No. 1, while stirring. In cold weather, use only half of No. 2, with the full quantity of No. 1.

Should the image flash up almost immediately when the plate is placed in the developer, it usually indicates overexposure, and a few drops of a 10 per cent. solution of potassium bromide should be added to the developer, or a weak developer at once substituted.

If, after fixation, the plate is still too black and dense, it may be dropped (after

rinsing) into the following reducer and rocked continuously:

Potassium permanganate	0.5 gm.
Sulphuric acid	1.0 c.c.
Water	1050.0 c.c.

Permanganate stains may be subsequently removed by a 1 per cent. solution of oxalic acid.

The following intensifier may be used for underexposed plates:

Mercuric chloride	11 gm.
Potassium bromide	6 gm.
Water	210 c.c.

The plate is left in this solution until it looks white; is then washed in running water for about half an hour; then placed in a solution of sodium sulphite, 45 gms., in water, 180 c.c., until it has turned black; then thoroughly washed.

After the plate is dry, a print may be made from it, if desired, just as in photography. (Chiefly from Christie's "Manual of X-Ray Technic.")

To make a stereoscopic radiogram, proceed as follows: First see that the part to be radiographed is in an immovable position upon the plate-holder. Then put in a plate and make the first exposure. Then remove this plate and put in another. Now shift the tube to the right or left for about three inches, and make a second exposure. When viewed side by side with a stereoscope, the finished plates or prints are fused into one perspective image.

Localization of Foreign Bodies:

The plate is placed upon the table and two crossed wires placed upon it, one of the wires being placed perpendicularly beneath and parallel to the horizontal bar carrying the tube, so that the focus point of the target, when shifted, will always be perpendicularly above this wire. (Fig. 73.) "The focus point of the target is accurately centred perpendicularly above the point of intersection of the cross wires," and then shifted a known distance, say two inches, from the centre. The part to be radiographed is now placed firmly upon the wires and plate, the former being inked to show their position upon the body, and the plate's position upon the body being also indicated by an indelible pencil. The first exposure is now made; then the tube is shifted two inches to the other side of the centre and the second exposure made.

After development, the plate is placed on a table beneath a horizontal bar representing that carrying the focus tube, and with the same relations to this bar as it bore previously to that carrying the tube. Threads are fastened to the bar at the two points occupied by the focus point of the tube, and the end of one thread placed upon a point of its foreign-body image on the plate, and the end of the other thread on a corresponding point on the other image. The point of intersection of the threads represents the position of the foreign body in relation to the plate, and a mark can be made on the plate perpendicularly beneath this point of intersection, and the distance noted. The distance of the mark on the plate from the two cross wires can also be measured, so

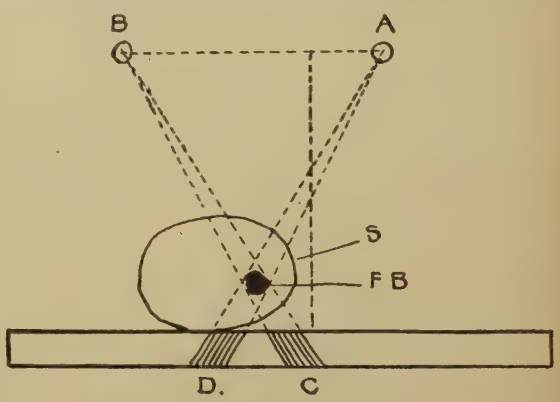


Fig. 73.—Showing Mackenzie-Davidson method of localizing a foreign body (after Walsh).

A, First position of tube.
B, Second position of tube.
S, Skull or limb.
F B, Foreign body.
D, Shadow thrown on plate by tube in A position.
C, Shadow thrown on plate by tube in B position.

that all the data required for accurately localizing the foreign body are thus obtained. (Abstracted from Christie.)

A special apparatus for localizing foreign bodies in the eye is that of Sweet (see Part 6).

Fluoroscopy.—The fluoroscope consists of a screen of platinobarium cyanide fitted into the end of a dark box into which the observer looks. The screen fluoresces under the action of the X-rays, and if a part of the body is held against the screen between it and the X-ray tube, the fluorescence varies in intensity with the degree of obstruction to the X-rays offered by the interposed body.

For fluoroscopic work, a high voltage and low ampèrage is required. This may be obtained by reducing the windings of the primary coil, and in other ways.

In order to protect the patient, the exposure should be as brief as possible; and for the operator's protection the room should be completely darkened for at least three minutes before the rays are turned on, and the smallest practicable current and diaphragm aperture should be used.

Estimation of Therapeutic Dosage.—The quantity of X-rays received by an exposed object depends on (1) the quantity of rays generated in the X-ray tube (this is equal to the number of milliampères of current passing

through the tube multiplied by the number of volts); (2) the distance between the tube and the object (the intensity or penetrability of the rays diminishes as the square of the distance increases, *i.e.*, at twice the distance, four times as many milliampère seconds are required to produce the same effect); (3) the duration of exposure; and (4) the sensitiveness of the object.

The quantity of X-rays received by an object may conveniently be measured by the method of Sabouraud and Noiré. A Sabouraud pastille, which is a disc of barium platinocyanide on a thin sheet of metal, is placed at a distance from the target equal to half that between the target and the patient's skin, at least two centimetres from the tube and in a shaded room, for the discs are acted upon by heat and bright light in the same way as by the X-rays.

On exposure to the rays, the apple-green color of the disc changes gradually to red and reddish-brown. Tint B in the booklet supplied with the pastilles shows the color which is assumed after exposure to a dose which causes the hair to fall out. An additional exposure of one-fourth the time is an erythema dose (causing a slight erythema to appear within 15 to 21 days). The color is compared with the standard tint in a light weak in actinic rays, *e.g.*, weak daylight. It must be remembered that this method of estimating dosage is not perfect. Says Knox: "Sabouraud pastilles show correctly when used with medium tubes, but with hard tubes there is a tendency to under-exposure, tint B being reached a little too early, and with soft tubes there is a tendency to over-exposure, as tint B is reached a little too late." For this reason it is well to have a Bauer qualimeter connected by a single wire with the negative pole of the tube, to give an approximate idea of the hardness of the tube. It is a static electrometer consisting of two wings, which swing between two fixed plates, the wings and plates being equally charged so that they repel each other. The degree of this repulsion is in proportion to the potential of the cathode, and is indicated by the movements of a pointer over a scale. The same pastille should not be used more than three or four times.

The Lovibond-Corbett tintometer provides an accurate way of estimating the degree of coloration of the Sabouraud-Noiré pastille.

Holzknecht's, Bordier's, and Cox's chromoradiometers are similar to that of Sabouraud. In using their pastilles, the light of a match, a candle, a benzine lamp, or an incandescent lamp is recommended. Other methods of estimating dosage are by means of the Kienböck quantimeter, the Ionto quantimeter, and Hampson's radiometer; 10x (Kienböck) units = 5H (Holzknecht) = 1B (Sabouraud-Noiré) = 4 (Hampson) = dose sufficient to produce mild erythema of the skin or epilation where no filter is used.

In employing deep radiation, the superficial structures are protected against the soft rays by means of a filter consisting of some medium such as felt, or, best, aluminum, ranging from ½ to 3 mm. in thickness, which absorbs some of the softer radiation. When using an aluminum filter, a layer of felt, lint, wash leather, or paper must be placed between the filter and the skin to absorb the secondary radiations given off when aluminum is struck by the X-rays. If the filter is close to the skin, it must be connected to the earth by means of a wire. Lead sheets are used to protect the healthy skin against the X-rays.

Besides producing burns, the X-rays may also provoke hemorrhage, and interfere with healing; and radiation of the circulating blood can produce profound changes therein, particularly in causing a reduction in the lymphocytes. The dosage and frequency of X-ray treatments, therefore, should be controlled in part by the blood reactions. The blood should be examined weekly.

Rose Cold.—See Hay Fever.

Rötheln.—See German Measles.

Round-Worm Infection.—See Ascariasis.

Rubella; Rubeola.—See German Measles.

Rumination and Regurgitation.—L. *ruminat'io; re*, back + *gurgitar'e*, to flood.—**Causes.**—Heredity; neurasthenia; hysteria; epilepsy; idiocy.

Treatment.—Urge voluntary suppression of the habit. Instruct the patient to eat slowly and masticate thoroughly. Treat the underlying neurosis. Strychnine or the bromides may be tried (see Part 11).

Rupture of the Spleen.—See Spleen, Rupture of the.

Sacral Plexus.—See Fig. 74 and the chart, under Nerves, Peripheral, showing the distribution of sensory nerves in the skin.

The Sciatic Nerve, Main Trunk.—Paralysis here results in inability to flex the knee and in loss of motion in the ankle joint. The causes are fracture of the pelvis or femur; dislocation of the hip; pelvic tumors or inflammation; luxation of the sacrum due to relaxation of the sacroiliac synchondrosis; parturition; traction upon the thigh in breech presentations. (For sciatic neuralgia, see Sciatica, under Neuralgia.)

The External Popliteal or Anterior Tibial Nerve.—Paralysis of this nerve results in foot-drop, followed by talipes equinus. The causes

are traumatism, including constant kneeling or crouching, and forcible extension of the leg; neuritis; plumbism; tabes.

The Internal Popliteal or Posterior Tibial Nerve.—Paralysis of this nerve results in inability to extend the foot or flex the toes, followed eventually by talipes calcaneus. The causes

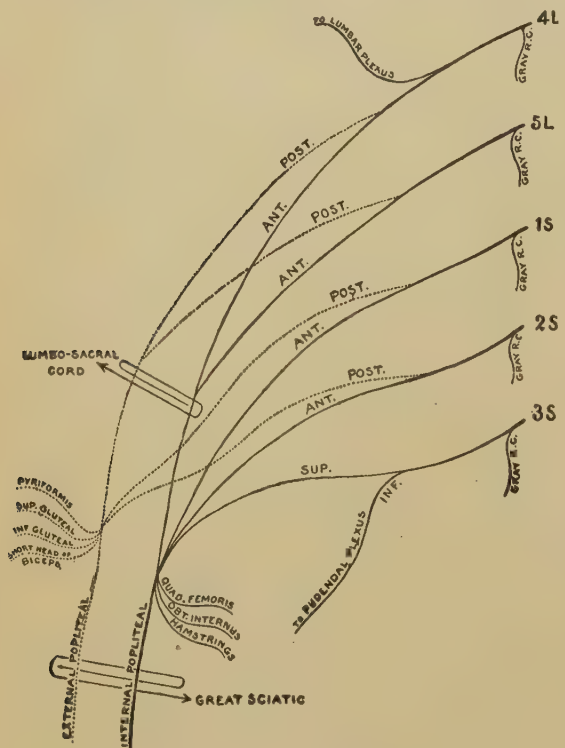


FIG. 74.—Diagram illustrating plan of sacral plexus. *Piersol's Human Anatomy.*

are forcible flexion of the knee; inflammation; tumors; aneurysm.

(See under Brachial Plexus for the Treatment of Nerve Lesions.)

Saint Vitus's Dance.—See Chorea, Acute.

Salivary Calculus.—L. *sali'va*, spittle; *cal'culus*, pebble. Calculous obstruction of a salivary duct is manifested by painful swelling of the gland (usually the submaxillary) immediately after each meal, with slow subsidence in the intervals. The calculus may be felt by probing, and is demonstrable by the X-ray.

Cut down on and remove the stone.

Salivary Fistula.—L. *fis'tula*, pipe. Trauma is the usual cause. Spontaneous closure is the rule. If desired, the fistula may be closed by means of the cautery. A fistula of the parotid duct on to the face should be slit open into the mouth and converted into an internal fistula.

Salivary Hypersecretion.—See Ptyalism.

Salivary Hypertrophy.—See Mikulicz's Disease.

Hyposecretion.—See Aptyalism.

Inflammation.—See Mumps and Parotitis.

Stone.—See Salivary Calculus.

Salivary Tumor.—The mixed parotid tumor, since it usually becomes malignant, should be removed as soon as possible. Malignant growths require radical removal, with perhaps subsequent radium (*q.v.*) or X-ray (*q.v.*) treatment. See also Mikulicz's Disease.

Salivation.—See Ptyalism.

Sand-Fly Fever.—See Phlebotomous Fever.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Malignant Neoplasms.

Saturnism.—See Lead Poisoning.

Sausage Poisoning.—See Poisoning.

Scapulodynia.—L. *scap'ula*, shoulder-blade + Gr. *ὀδύνη* pain. See Myalgia.

Scarlet Fever; Scarlatina.—L. *scarlati'na*, scarlet. A common acute, infectious, contagious, and epidemic disease of very variable severity, characterized by an incubation period of from one to seven days, followed abruptly by headache, nausea, vomiting, sore throat, a punctate erythema in the roof of the mouth, fever, rapid pulse, often convulsions, and, after twelve to thirty-six hours or longer, a diffuse scarlet rash consisting of scattered minute macular red points upon a flushed skin. The rash is brilliant red in severe cases, noticeable only in the axillæ, groins, and loins in mild cases, and sometimes even absent. The face is relatively free. The papillæ of the tongue are enlarged, especially at the tip and edges (strawberry tongue). After two or three days or longer the rash and fever gradually subside, followed by desquamation. Streptococcic and sometimes other pyogenic infections frequently supervene, viz., angina, sometimes resembling diphtheria, tonsillar abscess, otitis media, maxillary sinusitis, cervical lymphadenitis, arthritis, pleuritis, endocarditis, pericarditis, septicæmia, bronchopneumonia. Nephritis is very prone to occur.

Scarlet fever should be distinguished from erythema scarlatinaforme, measles, rubeola, septicæmia, diphtheria with an erythematous rash, and drug eruptions (quinine, belladonna, antitoxin, copaiba, iodides, iodoform, strychnine, antipyrine, salicylates, corrosive sublimate used externally). Scarlet fever is accompanied by leucocytosis.

Prognosis.—The mortality averages about 8 to 9 per cent. The disease seems to have become milder in recent years.

Treatment.—Isolate the patient (see Disinfection), and confine him to bed in a quiet, well-ventilated room, at a temperature of 60° to 70° F. Open the bowels with calomel, or castor oil, and secure a daily movement by means of a mild laxative, such as citrate of magnesia, or aromatic cascara (for all Drugs, see Part 11). Prescribe a bland liquid diet consisting of milk, two quarts daily, buttermilk, whey, thin cereal gruels properly salted, ice-cream, and orange juice. If the milk is not well borne, add lime water, gruels, cocoa, carbonated water, malted milk, or Mellin's or Horlick's food, or try koumyss (Part 11) or Kefir. In bottle-fed infants dilute the milk one-half. Administer an abundance of water in the form of cream of tartar lemonade (Part 11). Allow no meat or meat extractives because of their irritating effect on the kidneys.

The following old-fashioned fever mixture can do no harm:

℞ Spiritus ætheris nitrosi..... ʒii (mxv per teaspoonful)
Potassii citratis... ʒi (gr. iiss per teaspoonful)
Liquor ammonii acetatis..... ʒiss (ʒss per teaspoonful)
Syrupi simplicis... ʒi
Aquæ camphoræ, q.s. ad..... ʒiv

M. Sig.—One teaspoonful (for a three-year-old) to one tablespoonful (for adult) every three hours.

The throat should be gargled or sprayed every three hours with hot normal saline solution (ʒi ad Oi), or boric acid solution containing carbolic acid, gr. v to the ounce, and a little sugar, or Dobell's solution (Part 11); or hydrogen peroxide diluted with three or four volumes of water. The throat may be gently swabbed or mopped occasionally with Lœffler's solution (Part 11), or diluted tincture of iodine. If a nasal discharge is present, the nose may be cleansed with swabs of absorbent cotton, and calomel insufflated or liquid albolene instilled. If deemed advisable, the nose and throat may be irrigated by means of a soft catheter, with hot normal saline solution every four to six hours; but the danger of thereby forcing infectious material into the middle ear should be borne in mind. During the irrigation the patient should breathe through the mouth and should refrain from swallowing. Meddlesome treatment should, however, be avoided.

If diphtheria is suspected, take cultures for the diphtheria bacillus from beneath the pseudo-membrane. Watch the ears, and incise the drum membrane under cocaine anæsthesia at the first sign of bulging (see Part 7, Ear Diseases.)

For a temperature of 103.5° F., or over, employ hot or tepid sponging.

For restlessness or insomnia, prescribe sodium bromide.

If muscular twitching, delirium, and stupor, indicative of nephritis, occur, or the urine becomes scanty, apply hot poultices over the kidneys, and give saline infusions (0.9 per cent., one-half to one quart, two or more times daily) and saline purgatives. Urotropine is recommended by Widowitz as a preventive of nephritis.

For circulatory weakness administer strychnine, or digitalis.

For marked delirium, administer morphine.

For adenitis, apply the ice-bag; or compression with flexible collodion; or ichthyol, 30 per cent., in zinc ointment, every three hours; or cataplasma kaolini, every six hours; or ung. Credé inunctions, gr. x, rubbed in for fifteen minutes twice daily. Should suppuration seem unavoidable, make hot applications, and incise freely as soon as fluctuation appears.

Antistreptococcus serum (Part 11) is well recommended for severe cases. For complicating streptococcic infections as well as for the scarlet fever itself are recommended injections of killed streptococci, 100,000,000 at the first injection, increased in subsequent injections (given every five to seven days) to 500,000,000. Autogenous vaccines from cultures obtained from the nose or throat should be preferred; but the results of vaccine therapy are not very striking.

As soon as desquamation begins, the skin should be oiled daily with sweet oil, cold cream, lanolin softened with oil, or cacao butter, and a daily warm bath given.

The patient should be kept in bed for at least three weeks, and for ten days after the fever has subsided; and nephritis should be guarded against for three weeks after getting up. Warm clothing should be worn, with a flannel protector about the loins, and cold should be avoided. The liquid and soft diet should be continued for from four to six weeks, then toast, crackers, vegetables, eggs, fruit, broths, and a little meat added. Iron should be prescribed, if need be, as soon as all acute symptoms have subsided. If the appetite is poor, prescribe tincture of nux vomica and dilute hydrochloric acid before meals.

Quarantine should be maintained for six to eight weeks from the beginning of the illness, and as long as there is present any discharge from the ear or nose, or any other suppurating focus, or any desquamation or crusts.

After the patient has left his room, he should be bathed from head to foot with soap and hot water, followed with bichloride solution, 1 : 5000 to 1000; the bed-clothing, etc., should be boiled, and the room disinfected, as described under Disinfection.

Schistosomiasis.—Gr. *σχιστός* cleft + *σῶμα* body. See under Distomiasis.

Schönlein's Disease; Purpura (Peliosis) Rheumatica.—L. *pur'pura*, purple; Gr. *πελιός* livid. See Purpura, in Part 5, Skin Diseases.

Sciatica.—L. *sciat'icus*; Gr. *ἰσχιαδικός* pertaining to the ischium. See Neuralgia.

Sciatic Nerve.—See Sacral Plexus.

Sclerema Neonatorum.—See Part 5, Skin Diseases.

Scleroderma.—See Part 5, Skin Diseases.

Sclerosis, Amyotrophic Lateral.—Gr. *σκλήρωσις* hardness; *α* neg. + *μῦς* muscle + *τροφή* nourishment; L. *lat'us*, side. See Atrophies, the Progressive Muscular.

Disseminated.—See Multiple Sclerosis.

Gastric.—See Cirrhosis of the Stomach.

Insular.—See Multiple Sclerosis.

Multiple.—See Multiple Sclerosis.

Pulmonary.—See Pulmonary Cirrhosis.

Scorbutus.—See Scurvy.

Scrivener's Palsy; Writer's Cramp.—See Cramps, Professional.

Scrofula.—L. "sow-pig." See Lymphadenitis Tuberculosa.

Scurvy; Scorbutus.—L. *scorbut'us*, scurvy. A disorder of nutrition caused by a deficiency in the dietary of certain vitamines (*q.v.*) which are contained in fresh vegetables and fresh meats, and characterized by a reduction in the alkalinity of the blood, anæmia, debility, mental apathy, swelling and sponginess of the gums, ulceration of the mouth, and a tendency to mucous, serous, intramuscular and subcutaneous hemorrhages, the latter appearing as petechiæ, ecchymoses, and large effusions producing indurated swellings. Exclude purpura, mercurialism, and acute lymphatic leukæmia. Contributing causes are overcrowding, overwork, exposure to cold and damp, and mental depression.

The Prognosis under treatment is favorable, a cure being usually accomplished in two or three weeks.

Treatment.—Antiscorbutics are fresh vegetables, fresh fruits, and fresh meats, viz., cabbage, carrots, beets, turnips, radishes, onions, spinach, dandelion leaves, lettuce, watercress, yams, potatoes (cook with the skins to retain the potassium salts), squash, asparagus, vinegar, sauerkraut, pickles, fresh infusion of malt (very highly praised), cranberries, raspberries, strawberries, gooseberries, grapes, melons, apples, lemons (two to four daily), limes, oranges, fresh meat-juice, milk, eggs. It is the freshness of the food that is the essential desideratum. Vitamines are destroyed by drying, pressing, tinning, processing, autoclaving, or pickling.

If the patient's digestion is weak, begin with small quantities of scraped meat, milk, and lemon juice, at short intervals, and gradually increase the dietary. For constipation give Rochelle salts and large enemata. For anæmia give iron (see Drugs, Part 11.)

The teeth should be kept clean with warm water, castile soap, and a soft brush or cloth, and one of the following aseptic and astringent preparations used as a mouth-wash:

Potassium permanganate, 1 : 300; carbolic acid, gr. v to the ounce of water; peroxide of hydrogen; potassium chlorate, ℥i, tr. myrrh, ℥ii, aq., ℥viii (warmed); tr. myrrh and tr. catechu, equal parts; tr. krameria, ℥ss, alum, ℥i, aq. ℥viii.

The first two are the best, says Osler. Paint the gums with a strong solution of silver nitrate. To check bleeding from the gums, apply adrenalin, 1 : 1000, or iron perchloride, concentrated solution (see also Gingivitis).

Employ gentle massage for the purpose of promoting the absorption of the hard subcutaneous effusions and for stiffened joints.

For scurvy in infants, see Scurvy, Infantile, following.

Scurvy, Infantile; Barlow's Disease.—Infantile scurvy is the same disease as the scurvy of adults (*q.v.*). The essential cause in infants is the exclusive feeding of sterilized foods. The characteristic symptoms are pain, tenderness, and swelling of the limbs, elicited by handling, and due to subperiosteal hemorrhage; pseudo-paralysis; anæmia; sponginess and swelling of the gums; hematuria; cutaneous hemorrhages; rarely other hemorrhages; sometimes exophthalmus due to orbital hemorrhage; sometimes fracture or epiphyseal separation revealed by crepitus.

Rickets frequently accompanies scurvy.

Appropriate treatment is promptly curative.

Treatment.—Prescribe fresh, unboiled, modified's cow's milk (see Infant Feeding), together with orange, lemon, apple, or grape juice, sweetened if necessary, 1 to 2 to 4 ounces daily, in divided doses, one hour before feedings. Fresh raw meat juice, ½ to 2 ounces daily, may also be given. It is prepared as follows: Four parts of

finely chopped steak is stirred with one part of cold water, allowed to stand for half an hour in the cold, and the juice then pressed through a cloth or meat press. To infants over seven months of age, one may give baked potato, two teaspoonfuls, rubbed up with milk into a thin cream, three or four times a day.

The affected limbs may be partly immobilized by means of cotton-wool, light splints, and a bandage.

During convalescence prescribe codliver oil and iron (Part 11.)

Seasickness.—See Vomiting.

Seat-Worm Infection.—See Oxyuriasis.

Second Nerve.—See Optic Nerve, in Part 6, Eye Diseases.

Septicæmia and Septico-Pyæmia.—Gr. σηπτικός putrid; πύον pus; αἷμα blood. Bacteræmia (septicæmia) and bacteræmia accompanied by metastatic abscesses (septicopyæmia) are caused by the following organisms, viz., streptococci (hæmolyticus, viridans, mucocus), staphylococci, pneumococci, the gonococcus, bacillus coli, bacillus proteus, bacillus pyocyaneus, bacillus influenzæ, bacillus typhosus, bacillus tuberculosis, bacillus anthracis, micrococcus tetragenes, bacillus aërogenes capsulatus, Friedländer's bacillus pneumoniæ. The organism usually enters through some focus of infection, *e.g.*, an infected wound, erysipelas, alveolar abscess, tonsillitis, sinusitis, otitis media, empyema, fetid bronchitis, bronchiectasis, pulmonary abscess, pulmonary gangrene, periostitis, osteomyelitis, phlebitis, lymphangitis, suppurative lymphadenitis, appendicitis, cholecystitis, gastro-intestinal infection, gonorrhœa, prostatic abscess, pyelitis, renal tuberculosis, omphalitis in the newborn, puerperal infection, malignant endocarditis, etc., etc.

The symptoms of sepsis are as follows: chills or chilliness, irregular fever, leucocytosis, small rapid pulse, anorexia, perhaps nausea and vomiting, perhaps diarrhœa, dry tongue with red border, often an erythema, delirium, prostration, anæmia, wasting. Exclude typhoid fever, acute miliary tuberculosis, malaria, profound anæmia, cancer, gall-stones in the common duct, Hodgkin's disease, and hysteria. A blood culture should be made, if possible, and the causal organism identified.

Treatment.—Accessible pus cavities should be freely evacuated and drained. Fresh air is of great importance. The mouth should be kept clean by means of an antiseptic, such as a mixture of glycerine, ʒiv, boric acid, ʒi, carbolic acid, ♏xx, and water to ʒiv, with which the tongue, cheeks, teeth, and gums should be swabbed every four hours, using for this purpose a cotton-stick or cotton or gauze sponge held with hæmostatic forceps. Bed-sores (*q.v.*), should be guarded against. The bowels should be moved daily. Concentrated liquid nourishment should be administered every three hours, *e.g.*, milk, at least three pints in twenty-four hours, buttermilk, three or more eggs, gruels and meat juice, prepared as directed under Scurvy, Infantile. For the toxæmia, give an abundance of water, by mouth, or as normal saline solution (0.9 per cent.) per colon by the drop method, subcutaneously, or intravenously (*q.v.*): ½ to 1 quart, two or more times daily. If stimulation is required, give whiskey, or brandy in full doses, strychnine, or digitalis (see Drugs, Part 11.)

Quinine hydrochlorate, gr. viiss, twice daily, may be given. Inunctions of unguentum Credé are recommended, especially for children: ʒi once to thrice daily for infants; as much as ʒiv twice a day. for older children (Forchheimer). Collargol (argentum colloidale Credé), 2 c.c. of a sterile 5 per cent. solution may be injected subcutaneously. (Ortner.) Nuclein, 5 per cent. solution, 10 c.c., hypodermically, once daily for three or four days out of every eight, may be tried. (Austin).

Vaccine and serum therapy is recommended by some (see Malignant Endocarditis).

Septic Sore Throat.—See Part 9, Throat Diseases.

Serous Meningitis.—See under Hydrocephalus.

Serratus Paralysis.—See the Long Thoracic Nerve, under Brachial Plexus.

Seventh Nerve.—See Facial Paralysis; and Habit Spasm.

Sewer-Gas Poisoning.—See Carbon Monoxide, under Poisoning.

Shaking Palsy.—See Paralysis Agitans.

Shistosomiasis.—See Distomiasis.

a rapid, weak pulse, low blood-pressure, rapid, shallow respirations, subnormal temperature, muscular relaxation, dilated pupils, pallor, cold clammy perspiration, diminished urinary secretion, and weakening or loss of consciousness. The immediate cause is, perhaps, depression of the vasomotor apparatus, due to overstimulation, severe hemorrhage, excessive vomiting or purging, toxæmia, emotion, pain, etc. Other and predisposing causes are early life (except the first week), old age, debility, anæmia, cold, hunger, thirst, fatigue.

Treatment.—Lower the head (unless there is a wound of the cranial or thoracic contents), surround the body with hot water bottles wrapped in towels, placed near but not in contact with the skin, and observe absolute quiet. Immobilize wounds. One may bandage the limbs and abdomen evenly and tightly over thick layers of non-absorbent cotton, or employ Crile's rubber pneumatic suit for one or two hours; but take care not to impede the diaphragm.

Administer hot normal saline solution (0.6 to 0.7 per cent., or, say, gr. xliv to the pint, temperature 102° F.) per rectum by Murphy's method (see under Appendicitis), or subcutaneously, or intravenously. Give, according to Crile, no more than a pint of simple saline solution at a time (to avoid pulmonary œdema), and repeat every hour until the pulse is restored. Adrenalin chloride, 15 minims of a 1:1000 solution, may be added to the pint of saline solution. Give the infusion very slowly. Blood transfusion (*q.v.*) is of value.

If respiration ceases, perform rhythmic thoracic compression (see Asphyxia) with the head low and the tongue pulled forward, but not too far.

Brandy, digitalin, strychnine, camphor, atropine, caffeine, and pituitrin (see Drugs, Part 11) may be of some service, especially pituitrin, 2 to 4 + minims every half to one hour. Morphine, gr. ⅛ to ¼, is of value in psychic shock. Matas injects slowly into the rectum, black coffee, 8 oz., panopepton, 1 oz., brandy or whiskey, 1 oz., tincture of digitalis, 15 minims, and laudanum, 10 minims, which may be repeated after two hours if necessary. Ander's favorite formula for shock is: ℞ Adrenalini chloridi (1 : 1000), ♏v, morphinæ hydrochloridi, gr. 1/24, nitroglycerini, gr. 1/60, atropinæ sulphatis, gr. 1/80. Nitroglycerine, however, lowers blood-pressure. (See also Hemorrhage and Anaphylactic Shock).

Prophylaxis.—In operating, endeavor to avoid shock by keeping the patient warm, by careful anæsthesia, by guarding against loss of blood, and by as little exposure as possible and very gentle handling of the tissues. Keep large wounds (as in breast amputation) and exposed viscera covered with towels wrung out of hot normal saline solution and frequently renewed. The Trendelenburg position militates against shock. With the object of blocking the nerve paths and preventing painful stimuli from reaching the nerve centres, Crile advocates injecting the line of the skin incision with novocain (*q.v.* in Part 11), and the peritoneum with quinin-urea-hydrochloride (*q.v.*) before cutting (Crile's anoci-association). Some administer morphine, gr. ¼, and atropine gr 1/100, one-half hour before the operation. In amputations, the nerve trunks should be blocked before dividing them, with intraneural injections of cocaine or eucaine, 10 to 15 minims of a 2 per cent. solution. In intralaryngeal operations, first give atropine and apply cocaine to the laryngeal mucous membrane, in order to avoid serious reflex vagus stimulation.

Avoid prolonged starvation before the operation.

Shoemaker's Cramp.—See Tetany.

Shortness of Breath.—See Dyspnœa.

Sick Headache.—See Migraine.

Sigmoiditis.—See Proctitis and Sigmoiditis.

Siriasis.—Gr. σιράειν to be hot. See Sunstroke.

Sixth or Abducens Nerve.—See Motor Nerves of the Eyeball.

Skin Ulcers.—See Ulcers, Cutaneous.

Skull Fractures.—See under Concussion, Contusion, and Compression of the Brain.

Sleepiness.—See Somnolence.

Sleeping Sickness; Human Trypanosomiasis.—Gr. τρύπανον borer + σῶμα body. A very fatal disease of Central Africa, caused by the trypanosoma Gambiense, an actively motile flagellate infusorium, which is transmitted by the common fly or by a Tsetse fly. (Fig. 75.)

The onset of the disease is slow and insidious, extending over a period of months, during which time the only change noticeable in the patient is a general enlargement of the lymphatic glands, from which the causal agent may be obtained by drawing off a drop of lymph with a small hypodermic syringe; the organism is less easily found in the blood (citrated and centrifugalized twice.)

Sooner or later symptoms of the sleeping sickness (meningo-encephalo-myelitis) may supervene, viz., apathy, rapid soft pulse, evening rise of temperature of one or two degrees, tremor of the tongue and hands, slow, weak, tremulous, indistinct speech, weak shuffling gait, lymphocytosis, organisms in the cerebro-spinal fluid, fatal termination in coma. In examining for organisms in the cerebro-spinal fluid, gently centrifuge the latter for five minutes, and examine the sediment under a vaselined cover-glass.

Sleeping sickness does not occur in all cases of trypanosomiasis. Spontaneous cure may occur,

The only remedies that have proved of value are (1) arsenic, in the form of atoxyl,

arsenophenylglycin, or salvarsan; (2) antimony, in the form of tartar emetic; and (3) trypanroth, an aniline dye introduced by Ehrlich and Shiga.

Atoxyl, gr. viiss, in normal saline solution (0.9 per cent), about 38 minims, freshly prepared, is injected intravenously (*q.v.*), or intramuscularly, at a temperature of 102° F., on two successive days, and this repeated every eight days for a long time—six months or longer. Permanent blindness, due to optic atrophy, sometimes results (see also Part 11).

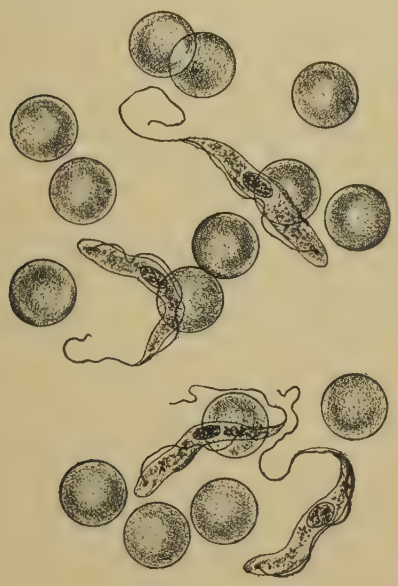


Fig. 75.—Trypanosomes in the blood (Webster).

Tartar emetic, gr. ss–iss, in normal saline solution, is injected intravenously on successive days. The technique is as follows: The tartar emetic is added to four ounces of normal saline solution in a glass flask, which is plugged with cotton-wool, and boiled for ten minutes. Another flask containing ten ounces of normal saline is also boiled. Through an intravenous needle, rubber tubing and glass funnel, such as is used in administering salvarsan, all sterilized by boiling, one to two ounces of normal saline, heated to 102° F., is allowed to flow slowly into the vein to make sure that no leakage occurs; then the solution of tartar emetic, also heated to 102° F., is gradually introduced, at no greater rate than one ounce per minute. Near the end of the flow, add three ounces more of the normal saline, to wash all the antimony into the vein; and withdraw the needle before all the saline has entered the vein. Never allow leakage into the tissues (because of subsequent necrosis) or the funnel to become empty of fluid. (Manson; Newham.)

Prophylaxis embraces deforestation, drainage, destruction of wild animals (the parasite passes from the blood of wild game to the intestine of the fly to the salivary glands of the fly, thence to man), clearing of 300 yards around houses, clearing of streams at fording places, destruction of flies, wearing of white clothing and boots, head nets, mosquito bars at night, immediate disinfection of bites, by boring with a wooden tooth-pick dipped in carbolic acid, isolation and screening of the sick, and examination of the blood and glands of all persons every three months.

(Nagana or Tsetse fly disease of Central Africa is a fatal trypanosomiasis of domestic animals. The fatal surra of India is also a trypanosomiasis of domestic animals. A trypanosomiasis also occurs in the Philippines and in South America, (Chagas disease or American Trypanosomiasis.)

American Trypanosomiasis is caused by the Trypanosoma cruzi, which is conveyed by certain ticks, the bedbug, and various species of Triatoma. Children are chiefly affected. The disease may be acute or chronic. The acute form is marked by recurring attacks of pyrexia, associated with thyroid, lymphatic, splenic and hepatic enlargement, and possibly signs of meningitis, and trypanosomes are demonstrable in the blood. The chronic form is characterized by thyroid and lymphatic enlargement, tachycardia and other cardiac irregularities, a "bluish bronze pallor" (attributable to suprarenal involvement), organic nervous disturbances, and often convulsions; perhaps hypothyroidism. In the chronic form trypanosomes are not found in the blood. The diagnostic methods and treatment are those of African trypanosomiasis. Spontaneous cure sometimes occurs.

Sleeplessness.—See Insomnia.

Slow Heart.—See Bradycardia.

Smallpox; Variola (Variola is Latin for Smallpox).—An acute infectious, contagious, and epidemic disease, of very variable severity, caused probably by a protozoön, the cytoryctes of Guaniere, characterized by an incubation period of nine to fifteen days, followed rather abruptly by severe headache, backache, vomiting, fever, chills, sometimes convulsions, and marked depression, with often a scarlatiniform or morbiliform and petechial rash; these symptoms persist usually three days, and then subside coincidently with the appearance of a general red,

maculo-papular, hard, shot-like rash, most marked on the forehead and wrists, the papules later becoming umbilicated vesicles; on about the eighth day of the disease, the vesicles become pustules, the temperature again rises, and continues elevated for three to six days in light cases, six to twelve days or longer in severe cases; the pustules later crust over and dry up, and on healing leave pitted scars or pock-marks. The disease may be very mild, sometimes not even presenting an eruption; or it may terminate in the vesicular stage. The eruption is usually discrete. Confluent smallpox is very serious, the mortality averaging 60 per cent. More serious still is the hemorrhagic pustular form in which hemorrhages occur in and around the pustules and from the mucous membranes. And finally, there is the invariably fatal purpuric variola in which a diffuse purpuric rash and hemorrhages from the mucous membranes occur in the initial stage of the disease.

Perhaps the most important complications are conjunctivitis, ulcerative keratitis, laryngitis, erysipelas, and broncho-pneumonia. Boils may develop during the crusting stage. Various paralyses, due to neuritis or myelitis, may occur during convalescence.

Smallpox must be distinguished particularly from chicken-pox. The vesicles of chicken-pox are not so hard or shotty; they are "more sharply elevated and rounder," are more translucent, and can be emptied by a single needle-prick, whereas in smallpox the fluid is contained in a "system of cells." Moreover, the pocks of varicella are abundant on the trunk, often appear upon the mucous membranes, and may be seen at one time in all stages of development—papules, vesicles, crusts. Pustular syphilis may resemble smallpox.

Treatment.—Isolate the patient (see Disinfection), and confine him to bed in a well-ventilated room at a temperature of 60° to 70° F. Open the bowels with calomel followed by a saline (for all drugs see Part 11). Prescribe a liquid or soft nutritious diet consisting of milk, eggs, cereal gruels and broths, with an abundance of water. For the pains, delirium, and high fever of the initial stage give phenacetin or morphine, and place an ice-cap to the head. Tepid or hot sponging, or the continuous warm bath at a temperature of 95° F., is well recommended. The latter should be employed for all confluent and hemorrhagic pustular cases. The following fever mixture may be of some service:

℞ Spiritus ætheris nitrosi..... ℥ii (ɱv per teaspoonful)
Potassii citratis vel acetatis..... ʒi (gr. iiss per teaspoonful)
Liquoris ammonii acetatis..... ℥iss (ʒss per teaspoonful)
Syrupi simplicis... ʒi
Aquæ camphoræ, q.s. ad..... ℥iv

M. Sig.—One teaspoonful (for three-year-olds) to one tablespoonful (for adult) every three hours.

For vomiting, withhold all food, and give only ice and champagne, or iced soda water. Give alcohol for severe toxæmia. In severe cases it is well to cut off the hair in order to prevent troublesome matting.

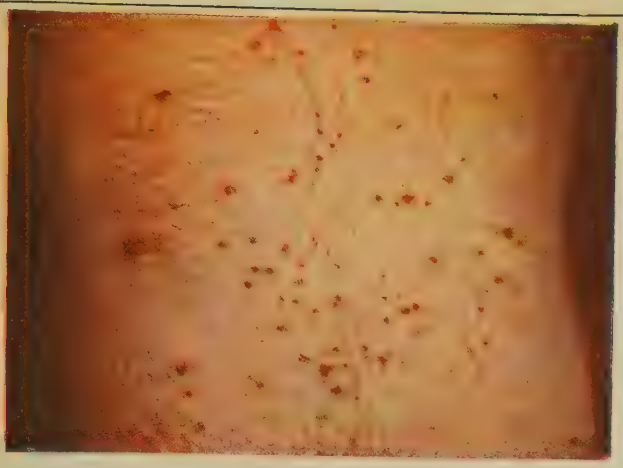
Frequently changed, cold, wet lint compresses, to which may be added glycerine, ʒi to the pint, and also menthol or carbolic acid, 1 per cent., for the itching, should be applied to the face and hands and covered with oil-silk, both to afford relief and to lessen the formation of crusts. Painting the lesions once or twice a day with tincture of iodine, pure or diluted according to the sensitiveness of the skin, is well recommended. Protection of the skin against the chemical light rays, as in a red-light room or in a dark room, is said to prevent suppuration. Hardened scabs should be softened with cold cream. The sheets should be dusted with finely powdered boric acid and changed frequently.

For conjunctivitis, cleanse the eyes every hour with warm boric acid solution, and anoint the lids with vaseline. Apply cold compresses if the eyes are swollen. The eyes may be bandaged to keep the eyeballs quiet. Keratitis calls for atropine (see Part 6, Eye Diseases).

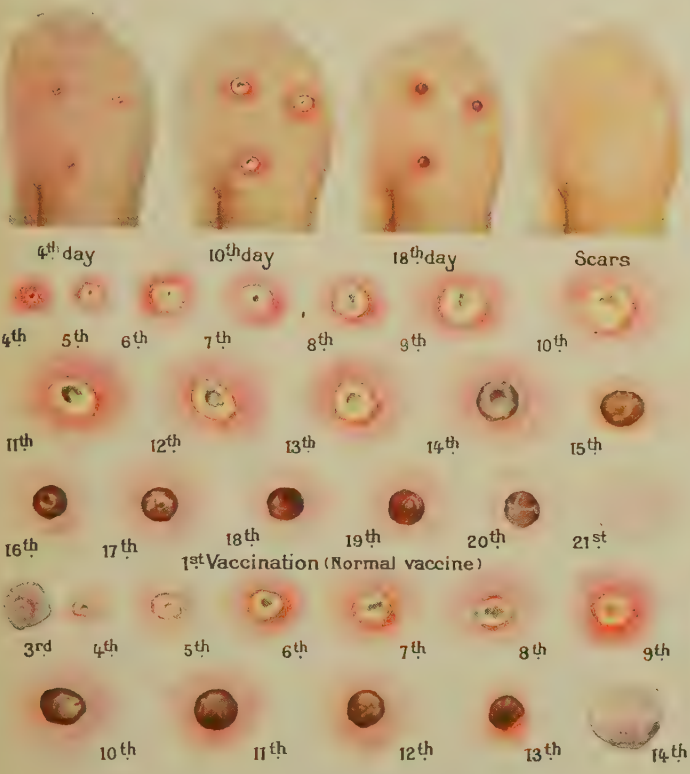
For the nose and mouth, employ Dobell's solution (Part 11). Orthoform lozenges, gr. i, are useful for the relief of a painful mouth.

In the pustular stage, administer alcohol in full doses and concentrated food even before the appearance of such severe symptoms of toxæmia as delirium, pallor, tremor, and subsultus tendinum. Give one-half to two ounces of whiskey in a glass of milk every two or three hours, and two to four eggs in the twenty-four hours. Quinine, gr. ii, every three or four hours, is also recommended. Give morphine for insomnia and delirium. Children should be restrained from scratching.

A patient's discharges should be disinfected as directed under Disinfection. The physician should don gown and rubbers before entering the sick room, and should wash his hands, face, and hair, the latter with alcohol, after leaving.



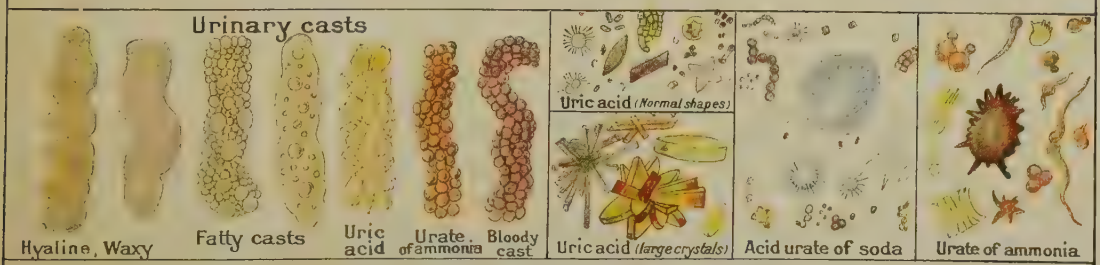
1. — Varicella


4th day
10th day
18th day
Scars
4th 5th 6th 7th 8th 9th 10th
11th 12th 13th 14th 15th
16th 17th 18th 19th 20th 21st
1st Vaccination (Normal vaccine)
3rd 4th 5th 6th 7th 8th 9th
10th 11th 12th 13th 14th
Re-vaccination (Modified vaccine)

2. — Vaccination

3.- Small-pox

From a model of the vaccination Institute on Ballu street, Paris.



4.- Normal and abnormal colored contents of the urine.

All exposed persons should be vaccinated (see Vaccinia). A successful vaccination is protective if performed within three days after exposure. The protection lasts from seven to ten years.

The patient should be quarantined until all dried discs of epidermis, etc., have been removed. He is then bathed thoroughly from head to foot with soap and hot water, followed by bichloride solution, 1 : 2000, clothed in clean garments, and released. The room is fumigated for twenty-four hours with formaldehyde (see Disinfection), and then washed with bichloride solution, 1 : 2000 to 1000; and the bed-clothing etc., boiled or otherwise sterilized. The clothing should be soaked in a 5 per cent. solution of carbolic acid or formalin before being removed to be boiled.

Smell.—(See Anosmia, Cacosmia, Hyperosmia, and Parosmia, in Part 8, Nose Diseases.)

Smoker's Tongue.—See Leukoplakia Buccalis, in Part 5, Skin Diseases.

Snake Poisoning.—See under Poisoning.

Soldier's Heart.—See heart-strain, and neurasthenia.

Somnolence.—L. *somnoleńtia*, sleepiness.

Causes.—Hysteria; rarely neurasthenia; senescence; thyroid insufficiency; acromegaly; tumor, abscess, syphilis, or arteriosclerosis of the brain; hydrocephalus; serous meningitis; toxæmia; dementia paralytica; dementia præcox. See also Coma.

Soor.—German for thrush. See Stomatitis, Parasitic or Mycotic.

Spasm, Cardial.—L. *spaśmus;* Gr. σπασμός. See Cardiospasm.

Carpo-pedal.—See Tetany.

Cervical Muscular.—See Torticollis, in Part 10, Orthopædics.

Facial.—See Habit Spasm.

Glottic.—See Laryngismus Stridulus.

Habit.—See Habit Spasm.

Intestinal.—See Enterospasm.

Laryngeal.—See Laryngismus Stridulus.

Mimic.—See Habit Spasm.

Œsophageal.—See Cardiospasm and Œsophagismus.

Professional.—See Cramps, Professional.

Pyloric.—See Dilatation of the Stomach, Chronic.

Spasmodic Croup.—See Laryngitis Acuta; and Laryngismus Stridulus.

Laryngitis. — See Laryngitis Acuta; and Laryngismus Stridulus.

Spasmophilia; Hypertonia.—See Tetany.

Spastic Constipation.—Gr. σπαστικός characterized by spasm. See Constipation.

Spastic Paralysis.—Spastic paralysis is characterized, in uncomplicated cases, by motor weakness, spasticity, exaggerated reflexes, and the Babinski reflex (extension of the great toe and flexion of the other toes on tickling the sole). It is an upper segment paralysis.

Spastic paraplegia refers to paralysis of the legs alone; spastic diplegia to paralysis of both arm and leg.

Causes.—1. Lateral sclerosis: not accompanied by muscular atrophy or sensory disturbance; very rare.

2. Progressive central muscular atrophy, see Atrophies, the Progressive Muscular.

3. Compression of the cord, due to fracture, dislocation or other injury, vertebral caries, aortic aneurysm, spondylitis deformans, cysticercosis (*q.v.*), and tumors (carcinoma, sarcoma, myeloma, osteoma, exostosis, chondroma, osteochondroma, excessive callus, myxoma, fibroma, lipoma, endothelioma, cylindroma, psammoma, lymphangioma, angioma, neurofibroma, glioma, tubercle, gumma, hydatid cyst). If the transverse lesion is complete, the paralysis may be flaccid.

4. Myelitis (*q.v.*).

5. Combined sclerosis (see Combined System Diseases).

6. Secondary degeneration of the motor tracts from cerebral lesions, *e.g.*, tumor, abscess, hemorrhage, embolism, thrombosis, traumatism, etc. (including infantile cerebral paralysis or Little's disease: see Hemorrhage, Meningeal, in the New-Born.)

7. Congenital arrest in the development of the pyramidal tracts.

8. Hereditary and familial spastic spinal paralysis.

9. Amaurotic family idiocy (*q.v.*).

10. Hysteria (*q.v.*).

11. Multiple sclerosis (*q.v.*).

12. Syringomyelia (*q.v.*).

13. Marie's cerebellar heredo-ataxia (see suffix to Ataxia, Friedreich's Hereditary).

Treatment.—Consider the cause, not forgetting syphilis. If in doubt, an exploratory operation may be considered. Division of the posterior nerve roots (2d and 3d lumbar, 5th lumbar, and 2d sacral) may relieve the motor weakness when the latter is due chiefly to the spasticity; and it may also be performed for the relief of intractable pain in inoperable cases. No more than two consecutive roots should be cut. The first sacral root should be spared, if possible, because it conveys sensory stimuli from the sole of the foot. Following section of the roots, employ massage, exercise, and splints.

In any case, employ passive movements, following the application of heat, three or four times daily, in order to relieve the spasticity and to prevent adhesions. The latter, when present, should be broken up, under anæsthesia if necessary. Encourage the patient in the voluntary use of the muscles, but not to the point of fatigue, for the latter increases the spasticity. Employ traction with weights to combat nocturnal reflex spasms. Deformities are to be treated by tenotomy or myotomy and orthopædic appliances (see Part 10, Orthopædics).

For retention of urine, catheterize the patient two or three times a day.

For incontinence of urine, try ext. ergotæ and ext. belladonnæ, aa gr. ¼ to ½, in pill, and instruct the patient to endeavor to empty the bladder every two hours. If there is residual urine, irrigate the bladder once or twice a day, and use the catheter every night. If the urine is septic, administer urotropin and ammonium benzoate (see Drugs, Part 11). Use a glass or rubber urinal.

For incontinence of fæces, plug the rectum.

For constipation employ cascara, liquid paraffin, abdominal massage, and enemata.

For priapism, administer camphor monobromate.

Guard against bed-sores (*q.v.*).

The outlook in infantile cerebral paralysis present at birth is unfavorable. Many die in infancy, and those who survive are mentally defective or epileptic. The prognosis in acute cerebral paralysis developing after birth (usually hemiplegia, and due to trauma or an acute infectious disease, *e.g.*, measles, scarlet fever, pertussis, diphtheria, pneumonia, smallpox), is more favorable.

Speech Anomalies.—**Nasal Voice.**—CAUSES.—Cleft palate; paralysis of the velum palatinum; nasal obstruction (*q.v.* in Part 8, Nose Diseases).

Slowed Speech.—CAUSES.—Convalescence from acute disease; psycho-motor retardation.

Scanning Speech (long pauses between syllables).—CAUSE.—Multiple Sclerosis.

Stuttering.—CAUSE.—Muscle spasm.

Stammering.—No muscle spasm is present.

Syllable Stumbling.—CAUSE.—Dementia paralytica. Get the patient to say "truly rural," "artillery cavalry brigade," and "around the rugged rock the ragged ruffian ran."

Aphasia (see under Brain Localization.)

Spina Bifida.—L. *cleft* or *bifid* spine. A congenital sacular hernial protrusion of the spinal meninges, with or without nervous elements, through an opening in the spine.

When the membranes alone protrude, the anomaly is called a meningocele; when the sac-wall contains filaments from the cord and fluid from in front of the cord, the condition is called a meningomyelocele; when the sac-wall contains cord elements, and is distended with fluid of the central canal of the cord, the condition is termed a syringomyelocele. The latter is usually associated with hydrocephalus. Paralysis is commonly present in the latter two conditions.

A spina bifida tumor usually gradually increases in size. Most cases die within a few weeks or a year as a result of meningitis, marasmus, or rupture of the sac. Some recover spontaneously; some as a result of operation.

The tumor should be kept aseptic and covered with an antiseptic powder and a pad of sterile cotton or a rubber ring-cushion. If hydrocephalus (unless stationary or relieved by operation) and complete paraplegia are absent, an operation may be considered. The most suitable age for operation is from nine to twenty-four months. No local infection should be present. Adults should not be operated upon except for serious reasons.

Spinal Accessory Nerve.—This nerve supplies the sternomastoid and trapezius muscles and the larynx. It may be involved in bulbar paralysis, meningitis, tumor, or caries. Spasmodic torticollis is due to irritation of this nerve.

Spinal Cord Compression.—See Myelitis, and Spastic Paralysis.

Spinal Cord Localization.—The Sensory Tracts.

Sensory nerve axones from the posterior spinal ganglia (see Fig. 76) enter the cord through the posterior nerve roots and divide in the form of a Y into two branches, which pass, the longer one upward and the other downward, in the root zone of the column of Burdach, a few of the ascending fibres occupying Lissauer's tract. Each branch gives off collateral branches at right angles to its course.

The longer branch of the Y-shaped division ascends to the medulla or ends, together with its collaterals, in arborizations about the dendrites of cells situated at various levels in the anterior, central and posterior portions of the gray matter of the cord, some crossing through the posterior commissure to the other side, and some remaining on the same side. A second set of axones from the cells of the median column of Clark pass into the direct cerebellar column of the same side and upward to the cerebellum (transmitting muscle-sense impressions). Other axones from the central cells cross over to

the opposite side and ascend in the antero-lateral column and the column of Gowers (transmitting temperature and pain impressions). Axones from the anterior cells pass out into the anterior motor roots.

The short branch of the Y-shaped division from the posterior root descends in the comma-shaped bundle of Schultze and terminates, together with its collaterals, in the gray matter of the posterior horn. Its function is unknown.

The column of Goll consists of sensory fibres from the sacral, lumbar and dorsal regions, the sacral fibres lying next to the posterior septum, the lumbar fibres external and anterior to the sacral, and the dorsal fibres in the lateral portion of the column. The column of Burdach consists of sensory fibres from the cervical region.

A lesion of the central gray matter results in analgesia and thermo-anæsthesia, without tactile anæsthesia or ataxia.

In lesions of the cauda equina the distribution of the anæsthesia suggests a cord lesion (see Plate showing areas of anæsthesia on body corresponding to cord segments); but the accompanying paralysis in caudal lesions is much more widespread than would be associated with the suggested lesion of the cord. In cases of fracture, too, it is to be remembered that the cord ends at the first lumbar vertebra.

In hysterical paraplegia (traumatic neurosis, spinal concussion, etc.) the anæsthesia never involves the genital organs, perineum or anus (charcot), and it affects both limbs up to the trunk (see also under Brain Localization: Organic versus Functional Paralysis).

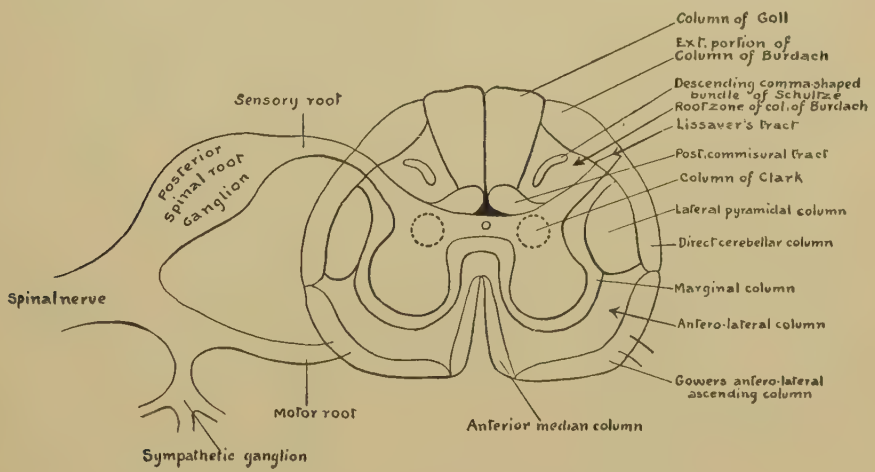


Fig. 76.—Spinal cord in cross section.

Muscle sense impressions are conveyed by way of the long fibres of the posterior columns and the direct cerebellar tract of the same side.

Temperature and pain impressions traverse shorter fibres to the central gray matter of the same side of the cord, whence new neurones cross the cord and ascend in the antero-lateral columns.

Tactile impressions traverse the posterior columns and also enter the gray matter, whence new neurones carry them into the antero-lateral columns, mostly of the opposite side.

A lesion of the root zone of the column of Burdach results in tactile anæsthesia, analgesia, and ataxia, the latter due to loss of muscle sense.

A lesion of the posterior columns of the cord results in ataxia alone, or associated with tactile anæsthesia.

In multiple neuritis the anæsthesia is bilaterally and symmetrically glove- or stocking-shaped and does not extend to the trunk.

The course of the *Motor Tract* is described under Brain Localization.

Cortico-spinal or upper motor segment paralysis is characterized by a partial or incomplete paralysis, about equal involvement of all the muscles of the paralyzed limb, stiffness of the joints due to tonic muscular rigidity, sometimes spasmodic muscular contractions, absence of atrophy except to a slight degree from disuse, absence of flabbiness and of altered response to electrical stimulation, increased reflex irritability, muscle clonus, and, finally, sudden extension of the great toe on scratching the sole of the foot (Babinski's reflex). Causes are: Cerebral disease (hemiplegia), a transverse lesion of the cord, as in Pott's disease, transverse myelitis, thrombosis, hemorrhage,

and tumor, primary lateral sclerosis, syphilitic paraplegia, traumatism without complete division or destruction of the cord.

Spino-muscular or lower motor segment paralysis, due to disease of the motor cells in the anterior gray horns of the cord or of their efferent axones, is characterized by a usually complete paralysis, usually limited to certain muscles of the paralyzed limb, relaxation of the joints due to relaxation and flabbiness of the muscles, loss of reflex irritability, atrophy, loss of response to electrical stimulation of the nerve, and loss of response to direct faradic stimulation of the muscle (reaction of degeneration), sometimes fibrillary twitchings. Causes are: Anterior poliomyelitis, acute or chronic; amyotrophic lateral sclerosis; myelitis, focal or diffuse; syringomyelia; embolism; thrombosis; hemorrhage; tumors; neuritis; complete division of the cord.

When the spinal cord is injured by fracture or dislocation of the vertebræ, but not destroyed, there is total paralysis below the level of the injury, but the limbs are rigid and the tendon reflexes exaggerated. If the cord is destroyed the limbs are completely relaxed and the tendon reflexes are lost, later on to return automatically.

The Reflexes.—Loss of tendon reflexes occurs in lesions in the sensory or motor portion of the reflex mechanism, in nerves or cord. Causes are: Locomotor ataxia, general paresis, syringomyelia, anterior poliomyelitis, transverse and diffuse myelitis, disseminated sclerosis, hemorrhage in the cord, tumors of the cord.

Exaggeration of the tendon reflexes occurs in upper motor segment paralysis and in hysteria. In hysteria, however, there is no Babinski reflex.

The bladder and rectum reflexes are centralized in the fourth and fifth sacral segments of the cord. If a lesion occurs above these centres, thus cutting off connection with the controlling or inhibitory influence of the brain, the bladder and rectum automatically empty themselves at intervals without the control of the individual. If the reflex centers themselves are destroyed, however, retention of urine and fæces occurs, sometimes with passive or paradoxical incontinence of urine from overflow, and sometimes, instead of retention, a constant dribbling due to weakness of the sphincter.

Gait.—See Gait.

Table I.—Showing the Muscles Represented in Groups of Cells in the Various Segments of the Spinal Cord, *Starr's Nervous Diseases.* Lea & Febiger.

II., III. Cervical.	IV. Cervical.	V. Cervical.	VI. Cervical.	VII. Cervical.	VIII. Cervical.	I. Dorsal.
Diaphragm.	Diaphragm.					
Sterno-mastoid.	Lev. ang. scap.					
Trapezius.	Rhomboid.	Rhomboid.				
Scalenus.	Supra- and infraspin.	Supra- and infraspin.				
	Deltoid.	Deltoid.				
	Supin. long.	Supin. long.				
	Biceps.	Biceps.	Biceps.			
		Supin. brev.				
		Serratus mag.	Serratus mag.			
		Pect. (clav.).	Pect. (clav.).			
		Teres minor.	Pronators.	Pronators.		
			Triceps.	Triceps.		
			Brach. ant.	Brach. ant.		
			Long extensors of wrist.	Long extensors of wrist. and fingers.		
				Pect. (costal).		
				Latis. dorsi.		
				Teres major.		
				Long flexors of wrist and fingers.	Long flexors of wrist and fingers.	
					Extensor of thumb.	Extensor of thumb.
					Intrinsic muscles of hands.	Intrinsic muscles of hands.

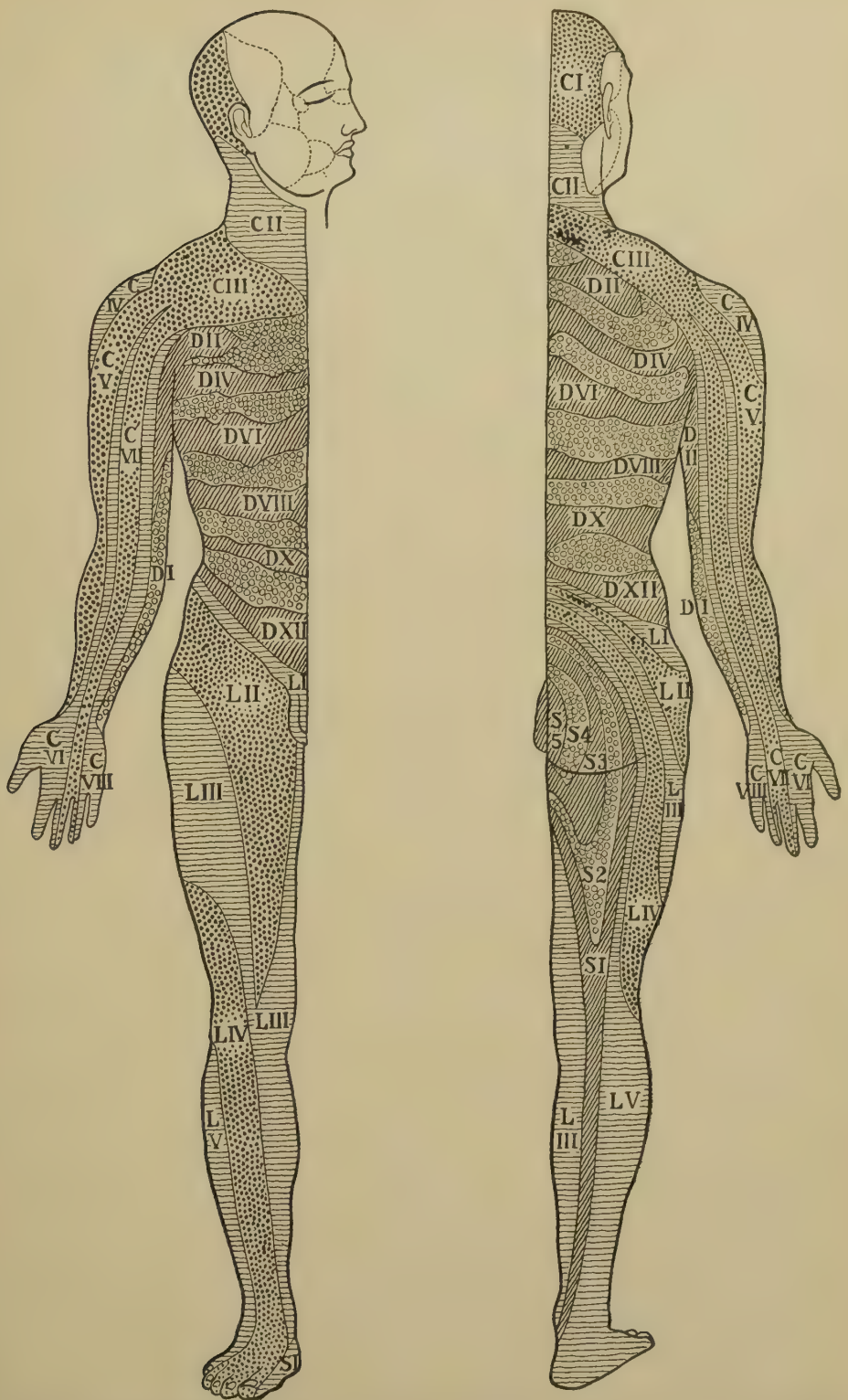


FIG. 77.—Areas of anæsthesia after lesions in the various segments of the spinal cord. (One must remember that each part of the skin is supplied with sensory nerves from two adjacent segments of the cord, so that where the area of anæsthesia corresponds to a certain segment of the cord in the diagram, the lesion in the cord must involve also the next segment above. The spinal cord ends at the first lumbar vertebra.)

TABLE I.—*Continued.*

I. Lumbar.	II. Lumbar.	III. Lumbar.	IV. Lumbar.	V. Lumbar.
Quadr lumb. Obliqui. Transversalis. Psoas. Iliacus.	Psoas. Iliacus. Sartorius. Quad. ext. cruris.	Quad. ext. cruris. Obtutator. Adductores.	Obturator. Adductores. Glutei.	Glutei. Biceps femoris. Semi-tend. Popliteus.

I. Sacral.	II. Sacral.	III. Sacral.	IV. and V. Sacral.
Biceps fem. or Semi-memb. Ext. long. dig. Gastroc. Tibialis post.	Gastroc. Tibialis post. Tibialis anticus. Peronei. Intrinsic muscles of foot.	Peronei. Intrinsic muscles of foot.	Sphincter ani et vesicæ. Perineal muscles.

TABLE II.—Localization of Muscular Reflex Acts in the Spinal Cord, *Starr's Nervous Diseases.* Lea & Febiger.

Pupillary reflex through the sympathetic: Dilatation of the pupil produced by irritation of the neck.	Fourth cervical to first dorsal.
Scapular reflex: Irritation of the skin over the scapula produces contraction of the scapular muscles.	Fifth cervical to first dorsal.
Biceps and supinator longus: Tapping their tendons produces flexion of the forearm.	Fifth and sixth cervical.
Triceps reflex: Tapping tendon produces extension of forearm.	Sixth cervical.
Scapulohumeral reflex: Tapping the inner lower edge of the scapula causes adduction of the arm.	Seventh cervical.
Tapping extensor tendons at the wrist causes extension of the hand.	Sixth to eighth cervical.
Tapping flexor tendons at the wrist causes flexion of the hand.	Seventh to eighth cervical.
Palmar reflex: Stroking palm causes closure of fingers; finger clonus.	Eighth cervical to first dorsal.
Abdominal reflex: Stroking side of abdomen causes retraction.	Ninth to twelfth dorsal.
Genital reflex: Squeezing the testicle causes contraction of the abdominal muscles.	First to third lumbar.
Patella tendon: Striking tendon at knee causes extension of the leg; "knee-jerk."	Second and third lumbar.
Achilles tendon reflex: Tapping the Achilles tendon causes flexion of ankle.	First to third sacral.
Foot clonus: Extension of Achilles tendon causes flexion of the ankle.	First to third sacral.
Plantar reflex: Tickling sole of foot causes flexion of the toes.	First to third sacral.
Babinski's reflex: Scratching sole of foot causes extension of great toe and flexion of the others.	First to third sacral.
Mendel's reflex: Tapping the tendons of the toes causes flexion or extension of the toes.	First to third sacral.
Gordon's reflex: Deep pressure on muscles of calf of leg causes extension of the toes.	First to third sacral.
Oppenhem's reflex: Stroking the outer side of the leg near the tibia causes retraction of the toes and contraction of the tibialis anticus.	First to third sacral.
Spasm of anus on irritation.	Fourth and fifth sacral.

TABLE III.—Localization of Skin Reflexes in the Spinal Cord, *Starr's Nervous Diseases.* Lea & Febiger.

Reflex Acts.	Localization in Segment.
Epigastric reflex: Stroking breast causes dimpling of the epigastrium.	Seventh to ninth dorsal.
Cremasteric reflex: Stroking inner side of thigh causes retraction of testicle.	First and third lumbar.
Gluteal reflex: Stroking buttock causes dimpling in the fold.	Fourth to fifth lumbar.

Spinal Hemorrhage.—See Hæmatomyelia and Hæmatorrhachis.

Spinal Nerves.—(See Phrenic Nerve; Brachial Plexus; Lumbar Plexus; Sacral Plexus; Spinal Roots; Spinal Cord Localization; Nerves, Peripheral).

For the treatment of nerve lesions, see under Brachial Plexus.

Spinal Roots.—The diagnosis of disease of the spinal roots is made by the limitation of the resulting motor or sensory disturbance to the so-called root-areas (See Fig. 78). Severe darting or shooting pains are characteristic accompaniments; but they diminish as the nerve fibres are destroyed, and are replaced by hyperæsthesia and paralysis.

Etiology.—Spinal caries; tumors; local syphilitic menigitis.

Treatment.—Attend to the cause. For persistent severe pain, it may be considered advisable to divide the affected nerve roots intradurally.

Spirillum Fever.—See Relapsing Fever.

Spirochetosis Icterohæmorrhagica.—See Jaundice, Infectious.

Splanchnoptosis; Visceroptosis; Glenard's Disease; Enteroptosis.—Gr. σπλάγχνον viscus; L. *vis'cus;* Gr. ἔντερον bowel + πτῶσις fall. General ptosis of the abdominal viscera is here considered, *e.g.*—gastroptosis, coloptosis, nephroptosis, hepatoptosis, splenoptosis.

The symptoms which bring the sufferer with visceroptosis to the physician are variable, depending largely upon the organ which is predominantly affected. General symptoms are—dyspepsia, constipation, abdominal pain and tenderness, backache, headache, cardiac distress, palpitations, arrhythmia, perhaps shortness of breath, anorexia, loss of weight, frequent urination, neurasthenic and hysterical manifestations, etc. Retrodisplacement and prolapse of the uterus may be part of a general splanchnoptosis.

In coloptosis there is bulging of the lower abdomen when the patient sits up, which disappears on lying down. Backache and abdominal distress are relieved on lying down, or when the pendulous abdomen is lifted upward and backward by the interlocked hands of the physician standing behind the patient with his arms encircling the latter.

In gastroptosis the symptoms are those of gastric atony or nervous dyspepsia, viz. sensation of fulness or pressure after eating, flatulence, eructations, perhaps heartburn, anorexia, palpitations, headache, dizziness, lassitude, anemia, depression; and these symptoms are obviously increased by overeating and by working immediately after eating. Distend the stomach with carbon dioxide gas, as described under Dilatation of the Stomach, Chronic, (*q.v.*), and note that the lesser curvature as well as the greater is lower than it should be. Normally, the lower border of the stomach lies a hand's breadth above the umbilicus. Another method of ascertaining the position of the stomach is by palpation:—Give the patient one or two glasses of water to drink, and beginning from below upward, make short pushing strokes with the finger-tips, without raising the latter, until the water is felt to splash.

In nephroptosis the following symptoms may occur:—viz. local pain and tenderness; sharp attacks of pain radiating to the sacrum, back, and groins, increased by exertion and during menstruation; frequent, sometimes painful, urination; intermittent hæmaturia; perhaps intermittent hydronephrosis; perhaps reflex gastro-intestinal and nervous disturbances, etc.; perhaps Dietl's crises or paroxysmal attacks of pain, chill, fever, nausea, vomiting, and collapse, due to kinking of the renal stalk. Nephroptosis is more common in women, and occurs mostly on the right side. By bimanual palpation, practiced after the patient has jarred her body while on her hands and knees, it may be possible to lift up the loose kidney with the fingers and palpate it with the thumb.

To detect hepatoptosis, employ palpation and percussion, and examine the patient in both the recumbent and erect postures. Normally the liver dulness extends from the fifth rib in the nipple line above to the costal margin below.

Radiography following a bismuth meal gives important information regarding the nature of the ptosis. A bismuth meal consists of two to four ounces of bismuth sulphate suspended in mucilage of acacia or in milk. Take care that the X-ray tube exerts no pressure upon the stomach.

It should be borne in mind that a marked degree of visceroptosis may exist without symptoms. Therefore, when a ptosis is discovered, it should not necessarily be concluded that it bears a causal relation to symptoms present.

Etiology.—Congenital weakness of the supporting tissues; hereditary predisposition (a floating tenth rib is often found); general debility due to anæmia, tuberculosis, typhoid fever, sepsis or other severe infectious disease, diabetes, rickets, chronic heart, kidney

liver, or lung disease, excessive mental or physical strain, venereal excesses, prolonged nervous depression, neurasthenia, insanity, lack of exercise; alcohol, tobacco, etc.; loss of retroperitoneal fat in emaciation and wasting diseases; relaxed abdominal wall due to repeated pregnancies, recurring ascites, or the removal of an abdominal tumor; diminished intra-abdominal pressure due to loss of fat, or to a relaxed pelvic floor; enlargement and increased weight of a viscus, *e.g.*, the kidney; pressure from neighboring tumors causing displacement, as of the kidney; habitual overeating and overdrinking; working immediately after eating; chronic constipation; injuries and strains, *e.g.*, traumatism, constant riding over rough roads, horseback riding, constant stooping, heavy lifting, violent coughing, straining at stool, falls, etc.; constricting corsets and belts; localized peritonitis; congenital or acquired deformities of the thorax or the abdominal viscera (long shallow thorax; scoliosis).

Prognosis.—As to cure, the prognosis is uncertain.

Treatment.—The treatment aims to combat local atony by increasing the patient's general vigor. Enjoin adequate exercise in the open air, adequate rest (rest in bed for from two to four weeks in asthenic cases: see Neurasthenia), a daily tepid bath, preferably before breakfast, followed by a cool douche, especially the spinal douche, and friction with a coarse towel (in gastric atony the circular cold and warm douche over the stomach), daily brushing of the teeth before breakfast with castile soap and warm water, fresh air day and night, regular hours of eating, rest for one-half to one to two hours both before and after eating, preferably reclining on a couch on the right side, slow and thorough mastication of the food.

Gentle massage, practiced no less than one and a half hours after a meal, is useful for both gastric and intestinal atony; as is also galvanization or faradization, a large well-moistened sponge electrode being placed over the stomach, and a smaller sponge electrode over the seventh or eighth dorsal vertebra. The current should be strong enough to produce visible twitchings of the abdominal muscles, but should be applied for no longer than ten minutes. The electrical abdominal roller combines massage with electricity. Says Cohnheim, employ the galvanic current with irritable patients, the faradic current with relaxed patients.

Iron, arsenic, and strychnine in ascending doses, or nux vomica are indicated for anæmia and debility (see Drugs, Part 11).

Prescribe a bland, nutritious, and fattening, soft or finely divided diet, in small amounts at three-hour intervals (four or five small meals a day), fluids being restricted with meals but not between meals: finely minced beef, mutton, chicken, stewed tripe, stewed whitefish, eggs, raw or boiled three minutes, custards, well-cooked cereals, vegetables in purée form, fruits, olive oil, and fats (see also the tuberculosis dietary, in Tuberculosis, Pulm.). Tea, coffee, alcohol, and tobacco should be avoided. To stimulate the appetite, prescribe a bitter tonic to be taken fifteen to thirty minutes before eating (see Anorexia). The aim is to increase both muscular tone and the amount of intra-abdominal fat, with due regard to the patient's digestive capabilities. A digestive, such as taka-diastase, or pepsin, or pancreatin, or papain, may be of service in suitable cases (see Part 11).

Cascara, senna, and rhubarb are useful laxatives in ptosis of the colon, in conjunction with the general measures recommended under Constipation. Do not give phenolphthalein, which acts only on the small bowel (Abel); or agar-agar, which is contraindicated in marked atony. (Ortner; Sailer.)

The following abdominal exercises are recommended:

1. Lying upon the back with the hands above the head, raise the lower limbs to a right angle with the body and lower them slowly, at the same time breathing deeply.

2. Lying flat upon the back with the hands above the head, slowly rise to a sitting posture and back again, keeping the legs upon the floor.

3. Standing, move the trunk upon the pelvis forward and backward and from side to side.

4. Standing, hold one leg forward horizontally for ten seconds.

Abdominal supporters (Teufel, Ernst, Longstreth, Lane, Curtis, the last-named by far the best, says W. Langdon Brown,) are of the greatest service. They should support the abdomen from below upward and backward, should fit snugly to the symphysis pubis and Poupart's ligament below, and should reach above no higher than the umbilicus. They should be applied with the patient recumbent, the pelvis raised, the knees drawn up, and the head on a pillow. If need be, pads may be attached for the purpose of supporting individual organs, but they are probably superfluous.

Adhesive straps, preferably of moleskin plaster, may be employed until a belt is

procured. Sailer describes their manner of application as follows: The skin is first shaved and washed with ether. With the patient standing, an adhesive strip 2 or 3 inches wide is applied so that the anterior end overlaps the median line just above the symphysis. It is carried without tension obliquely upward and outward above the iliac crest, and across the spinal column in back. A second strip is placed in a symmetrical position on the other side, with the ends of both strips overlapping both in front and back. Then both strips are detached as far as the median axillary line, and while the abdomen is supported with the hand in front, just as much tension as possible is made upon the first strip, which is fastened to the back. The same procedure is repeated with the second strip. Then other strips are applied in the same way, and made to overlap the lower ones by about an inch. Transverse strips may then be applied in front and back. This support may be worn for several weeks.

In intractable cases, and where the condition is confined to but one or two organs, an operation may be considered; but it should not be undertaken lightly, since it often fails to accomplish any good. The organs which may require anchoring are the stomach, colon, liver, spleen, sigmoid, and kidney. In gastroptosis a posterior gastro-enterostomy (or a Finney pyloroplasty) as well as gastropexy should be done; although Hertz says it is "never followed by any improvement." Resection of the colon is even performed. In marked kinking at the splenic flexure, a short-circuiting anastomosis may be established between its limbs. The spleen may be stitched in place, or packed in place, with gauze, or best removed (splenectomy is contraindicated in amyloid degeneration and in leukæmia). Casper has "completely abandoned suture of the kidney, fixation to the ribs, etc.," and does "merely a (complete) decapsulation."

The stomach should be operated upon only where there is dilatation that is not relieved by medical treatment; the spleen only in severe cases or cases complicated with strangulation or intestinal obstruction; the kidney only when definite kidney symptoms accompany its displacement, *e.g.*, chronic dragging pain not relieved by palliative treatment, dilatation of the stomach or jaundice from pressure of the displaced kidney, hæmaturia, intermittent albuminuria, intermittent hydronephrosis, Dietl's crises. Separated recti muscles may have to be united.

In Dietl's crises, attempt to rectify the faulty position of the kidney by posture (say on the hands and knees) and bimanual manipulation, using general anæsthesia if necessary. It is recommended that heat be applied, and morphine and purgatives administered, the latter for the purpose of setting up intestinal peristalsis with the hope of thereby correcting the twist in the renal stalk. The attack usually passes off within a few hours, but operative interference is sometimes required.

Spleen, Movable; Splenoptosis.—See Splanchnoptosis.

Spleen, Rupture of the.—Rupture of the spleen is manifested by the sudden occurrence of intense pain, shock, and abdominal distention, with dulness in the flanks.

Causes.—Traumatism; enlargement of the organ due to malaria, typhoid fever, relapsing fever, etc.; pregnancy; splenic infarction; splenic abscess; aneurysm of the splenic artery; varicosed splenic veins.

Treatment.—Immediate operation is demanded, but the prognosis is grave.

Splenic Abscess.—Abscess of the spleen is rarely diagnosed except by an exploratory operation. The symptoms are splenic enlargement, pain, and tenderness.

Causes.—Septico-pyæmia; infectious diseases; hydatid cyst; neighboring inflammation (empyema, gastric ulcer, peritonitis); traumatism.

Treatment.—Free evacuation and drainage, or splenectomy, is indicated.

Splenic Anæmia.—See Anæmia, Splenic.

Enlargement.—See Splenomegaly.

Fever.—See Anthrax, in Part 5, Skin Diseases.

Splenic Infarction.—Gr. σπλήν; L. *splen;* L. *infarcir'e,* to stuff in. Splenic embolism or infarction is manifested by the sudden occurrence of local pain in the course of an endocarditis or other causal affection, *e.g.*, cardiac thrombosis, thrombosis in typhoid fever, marantic and anæmic states, aortic atheroma, aortic aneurysm, septico-pyæmia, etc. (see Embolism.)

The Prognosis is good in non-septic cases.

Treatment.—For the relief of pain, strap the lower thorax from spine to sternum during forced expiration, in order to lessen movement, and apply hot poultices, mustard poultices (Part 11), dry cups (*q.v.*), or the ice-bag; morphine may be given. Operate if an abscess forms, and drain the abscess or remove the spleen.

Splenomegaly.—Gr. σπλήν spleen + μέγας large. The enlarged spleen is superficial, hard and smooth, with a sharp edge, and

with its upper border notched in one or several places. It lies over the colon, as shown by inflating the latter with air per rectum by means of a Davidson syringe. The kidney lies in back of the colon.

Causes of Splenic Enlargement.—Splenic anæmia (Banti's disease); familial or hereditary (congenital) splenomegaly with slight chronic or intermittent acholuric jaundice (without bile pigment in the urine), undue fragility of the red blood-cells (see Blood Examination), and without anaemia (*q*), cured by splenectomy; acquired splenomegaly with acholuric jaundice, anaemia, undue fragility of the red blood corpuscles, and debility, also cured by splenectomy; Gaucher's disease (*q.v.*); primary endothelioma of the spleen; thrombosis of the splenic and portal veins, producing splenomegaly, anæmia, jaundice, recurrent hæmatemesis, and ascites; (perform splenectomy, if feasible); hepatic cirrhosis (alcoholic, syphilitic, hypertrophic, and hæmochromatosis; all presenting symptoms like those of Banti's disease); kala-azar or tropical splenomegaly; hydatid disease; distomiasis; tumors; splenic abscess; ponos; acute infectious diseases; malaria; syphilis; typhoid fever; debilitating conditions of childhood; rickets; tuberculosis; anæmia; leukæmia; Hodgkin's disease; amyloid degeneration; Addison's disease; purpura; erythremia; arthritis deformans; cardiac disease, etc.

A chronically enlarged spleen may be removed if it causes serious disturance. Splenectomy, however, is contra-indicated in leukaemia, amyloid degeneration, and erythræmia, etc. (see under Anæmia, Splenic).

Splenoptosis.—Gr. σπλήν spleen + πτῶσις fall. See Splanchnoptosis.

Spondylitis Deformans.—See Part 10, Orthopædics.

Infectious.—See Arthritis, in Part 10, Orthopædics.

Spontaneous Fractures.—See Fragilitas Ossium.

Sporotrichosis.—See in Part 5, Skin Diseases.

Spotted Fever.—See Cerebrospinal Fever, and Rocky Mountain Fever.

Sprue; Psilosis.—Gr. ψίλωσις a stripping. A tropical and subtropical, chronic remittent, catarrhal inflammation of the entire gastro-intestinal tract, from the mouth to the anus, with sore mouth, raw-looking tongue, indigestion, diarrhoea, light-colored, foul, acid, foamy stools, (full of yeasts), abdominal distension, anæmia, and wasting. A monilia may be the cause.

It may last from one to fifteen years, but if taken early it is usually cured.

Treatment.—Put the patient to bed, and first cleanse the bowels thoroughly by means of a purgative and colonic irrigation. The teeth and gums should be cleansed each morning before the first meal, with castile soap, warm water, and a soft brush or cloth, followed, several times during the day, by a weak antiseptic mouth wash, *e.g.* borax or sodium bicarbonate, one tablespoonful of either to the pint of warm water (see also Stomatitis.

Prescribe a strictly milk diet, beginning with four to six ounces of skimmed milk every two hours (about 60 ounces a day), sipped or sucked slowly through a fine tube ; and gradually increase the amount and strength of the milk as the symptoms abate, up to 13 oz. every two hours, nine times a day. The milk may be diluted, if need be, with lime water or soda water, and the bacillus Bulgaricus (Part 11) may be added. Continue this diet for at least six weeks after the mouth has cleared and the stools have become solid. Then add gradually, raw egg, meat juice, scraped beef, chicken, chicken broth, fish, fresh non-starchy vegetables, fresh fruit (excepting pineapple and alligator pears), etc., up to regular diet.

If milk is not well borne, substitute fresh raw meat juice, and later scraped meat, rare beef, etc., together with a little fresh fruit, *e.g.* apples, grapes, peaches, strawberries, etc.

The subcutaneous administration of emetine hydrochloride, gr. ss–i daily, for five days, is said to be effectual (F. Schmitter). Leonard Rodgers has recently cured two very severe and chronic cases by the subcutaneous injection of emetine hydro-chloride and the administration of autogenous vaccines (Part 11) made from streptococci cultivated from the mouth.

Employ an ointment of zinc oxide or bismuth for the anus. An abdominal band should be worn. The patient is best removed to a temperate zone.

Squint.—See Motor Nerves of the Eyeball, and also Part 6, Eye Diseases.

Starvation Fever of Infants.—See Inanition, Simple Acute.

Status Epilepticus.—L. *stat'us*, state. See Epilepsy.

Status Lymphaticus; Lymphatism.—L. *stat'us*, state ; *lym'pha*, lymph. A disorder of childhood, characterized by hyperplasia of the lymphatic tissues throughout the body, especially the lymphatic and thymus glands. The subjects of the affection are usually pale and flabby, the tonsils and adenoids are usually enlarged, and often slight rickets is present. Attacks of dysp-

noea (thymic asthma), asphyxia, or convulsions may occur. Sudden death sometimes occurs when an anæsthetic is given, or a slight operation performed, or even without apparent cause. The operative risk is said to be dangerous when the lymphocyte count (*q.v.*) is 40 per cent. or over. The condition cannot usually be diagnosed with certainty. It may possibly be due to overaction of the thymus gland. It usually disappears under proper feeding (see Feeding during the second year and beyond, under Infant Feeding), fresh air day and night, and adequate rest and exercise. Carbohydrates should be reduced and proteins increased. Iron and arsenic may be of service, (see Part 11). Thyroid extract may be given as in cretinism (*q.v.*). The X-rays (*q.v.*) may be applied to the manubrium sterni. See also Thymus Enlargement.

Steeple-Head.—See Oxycephaly.

Stenosis, Anal.—Gr. *στένοσις*, narrowing. See Rectal Stricture.

Bronchial.—See Bronchostenosis.

Intestinal.—See Constipation, and Intestinal Obstruction, Chronic.

Laryngeal.—See Part 9, Throat Diseases.

Œsophageal.—See Œsophageal Stenosis; and Foreign Bodies, in Throat Diseases, Part 9.

Rectal.—See Rectal Stricture.

Tracheal.—See Tracheal Obstruction.

Urethral. See Stricture of Urethra, Part 3.

Sternocleidomastoid Hæmatoma.—Gr. *στέρνον* sternum + *κλείς* key + *μαστός* breast + *εἶδος* form ; *αἷμα* blood + *-ωμα* tumor. Birth traumatism is the cause. It usually disappears spontaneously in from four to eight weeks.

Treatment.—Massage the tumor very gently for several minutes daily. Should wryneck develop, stretch the muscle by passive rotation of the head. Do not operate.

Stiff-Neck.—See Myalgia.

Stokes-Adams Syndrome.—This appellation designates an habitual bradycardia and arrhythmia associated with vertiginous, syncopal, epileptiform, or apoplectiform seizures.

The cause is either a lesion of the auriculoventricular bundle of His, producing heart-block (*q.v.*), or overstimulation of the vagus due to disease of the brain, medulla, cervical cord, or vagi themselves, or to functional (neurotic) irritation. An affection of the muscular bundle of His is the usual cause.

In vagus irritation the auricles and ventricles may beat in normal sequence, but slowly ; or the pulsations may be dissociated. In purely neurogenic or vagus cases the pulse is quickened by the administration of atropine, gr. $\frac{1}{60}$ to $\frac{1}{25}$, but not in myogenic cases.

Prognosis.—This is not necessarily bad in all cases.

Treatment.—Treat the underlying cause—syphilis, arteriosclerosis, etc. The administration of salvarsan, however, is dangerous. Atropine (see Part 11) may be of some benefit in bradycardia due simply to vagus irritation. During an attack of dizziness or syncope,etc., lower the head in order to overcome the cerebral anæmia.

Stomach Affections.—See Gastric Affections.

Stomach, Hour-Glass.—See under Gastric Ulcer.

Stomatitis.—Gr. *στόμα* mouth + *ιτις* inflammation.

I. Simple, Erythematous, or Catarrhal Stomatitis.—Simple inflammation of the mucous membrane of the mouth is manifested by pain, soreness, swelling, redness, and increased secretion of saliva.

Etiology.—Irritants: hot, cold, sour, or highly seasoned foods, tobacco ; uncleanliness ; dental caries ; traumatism caused by sharp teeth, difficult or fruitless sucking, etc.; dentition, including cutting of the wisdom teeth ; harelip ; mouth-breathing ; gastro-intestinal and hepatic disorders ; constitutional disorders : gout, diabetes, nephritis (uræmia), rickets, scurvy, tuberculosis, syphilis, cancer, urticaria, leukæmia, pregnancy and lactation ; acute febrile diseases ; central nervous diseases ; sprue or psilosis ; pellagra ; certain poisons : alcohol, mercury, iodide, lead, bromide, chlorine, sulphuric acid, phosphorus, bismuth, arsenic, antipyrine.

Treatment.—Attend to the cause. Enjoin cleanliness of the teeth and gums by the use of castile soap, warm water, and a soft brush or cloth ; and prescribe an alkaline antiseptic mouth wash, such as Dobell's solution (see Part 11), plain or diluted; or prescribe liquor antisepticus, or liquor antisepticus alkalinus, 1 : 2 or 3 of water; or peroxide, one-quarter strength; or carbolic acid, gr. v ad ℥ i ; or boric acid, borax, or sodium bicarbonate, ℥iv of either to the pint ; or zinc sulphate, gr. iiss to ivss ad ℥i ; or sodium salicylate, gr. x ad ℥i ; or alum, gr. x ad ℥i; or pot. permanganate, gr. iiss ad ℥i. The inflamed parts may be painted with tannin in glycerine, 5 per cent., several times a day ; or potassium permanganate, 0.8 per cent. every two hours; or silver nitrate, 0.5 to 1 per cent., once a day.

Ulcers may be touched about once a week with silver nitrate, 10 per cent., or stronger.

In fevers, the tongue, cheeks, teeth and gums may be swabbed every four hours with a mixture of glycerine, ℥iv, boric acid, ℥i, carbolic acid, ♏xx, and water to ℥iv, using for the purpose a cotton stick or cotton or gauze sponge held with hæmostatic forceps. For dry mouth, tongue and lips, use liquid vaseline.

℞ Boracis..... ℥ii
Sodii bicarbonatis..... gr. xl
Tincturæ eucalypti foliorum ℥i (vel olei eucalypti, ♏iii)
Glycerini..... ℥ss
Aquam, ad..... ℥viii

M. Sig.—Mix with an equal amount of warm water, and use freely as a mouth-wash. (Yeo.)

℞ Thymolis..... ℥i
Acidi benzoici..... gr. xlv
Olei menthæ piperitæ..... gtt. xx
Tincturæ eucalypti..... ℥iv
Alcoholis absoluti..... ℥iii

M. Sig.—One teaspoonful in half a glass of water as a mouth-wash or gargle. (Miller.)

℞ Acidi Salicylici..... ℥ii
Cocainæ hydrochloridi..... gr. xii
Glycerini,
Aquæ, aa..... ℥iiss

M. Sig.—Mouth-wash in very sore and painful cases. (Croftan.) Ice may also be sucked.

II. Aphthous, Herpetic, Follicular, or Vesicular Stomatitis.—This form of stomatitis is characterized by the occurrence of vesicles surrounded by red areolæ, which quickly break down into cream-white ulcers (canker sores). It occurs mostly in children in connection with dentition, indigestion, uncleanliness, and febrile diseases; and in women in poor health and during pregnancy, lactation, or menstruation. Other causes are arsenic, disease of the fifth nerve (often the result of cold), carious teeth, and gout. The disease usually clears up in one or two weeks.

(Bednar's aphthæ are ulcers on the hard palate caused by the nurse's finger or the artificial nipple.)

Treatment.—Prescribe tonics, wholesome food, fresh air day and night, regulation of the bowels, regular hours of eating and sleeping, and adequate rest and exercise. Enjoin oral cleanliness, and prescribe an alkaline antiseptic mouth-wash, as for simple stomatis. Touch the ulcers with silver nitrate, 10 per cent. (2 per cent. for infants); or tr. iodi; or chronic acid, 10 per cent.; or pot. permanganate, gr. iss in ℥ss; or a saturated solution of iodoform in ether. For infants use the following mouth-wash or spray:

℞ Sodii biboratis..... gr. xx
Glycerini..... ℥ii
Aquæ, q.s. ad..... ℥iv

The infant may have to be fed with a spoon, and the food cooled before giving.

III. Ulcerative or Fetid Stomatitis; Putrid Sore Mouth.—The causes are those of simple catarrhal stomatitis (*q.v.*). Specific ulceration occurs in syphilis, gonorrhœa, tuberculosis, cancer, impetigo, pemphigus, foot-and-mouth disease, and Vincent's angina (due to Vincent's spirillum associated with a fusiform bacillus).

Non-specific cases and Vincent's angina are usually cured in from five to ten days.

Treatment.—Potassium chlorate, used both internally and locally, is considered a specific in putrid sore mouth; it is excreted unchanged in the saliva. But it is poisonous, and should never be used if the kidneys are affected. Toxic symptoms are drowsiness, cardiac weakness, cyanosis, albuminuria, and suppression of urine (see under Poisoning). The dosage is as follows:

Under eighteen months—gr. ii every two to three hours; not more than 10 grs. in twenty-four hours. Eighteen months to three years—gr. ii–iii every two to three hours; not more than 15 grs. in twenty-four hours (Kerley says the drug is without danger in these doses); older children, gr. x, t.i.d.; adults, gr. xx, t.i.d. Kerley prescribes it in syrup of raspberry (syrupus rubi idæi) one part and water two parts. Do not give it any longer than a week at a time. Locally it is used in the strength of 10 to 20 grains to the ounce.

One may use as a mouth-wash any of the antiseptics enumerated under simple stomatitis. Kerley recommends for infants hydrogen peroxide, one part of a 3 per cent. solution in two parts of water; also concentrated boric acid solution. The ulcers may be painted about once a week with silver nitrate, 10 per cent. (2 per cent. in infants); or pot. permanganate, gr. iss in ℥ss; or liq. hydrargyri nitratis, 50 per cent.; or tr. iodi; or chromic acid, concentrated aqueous solution. For Vincent's angina the local application of arseno-benzol, 0.1 gm. in 100 c.c. of water is very effectual. Ulcerated cheeks may be kept from the teeth with pledgets of cotton wet with boric acid solution, or with a piece of raw turnip. (Keyes)

In mercurial stomatitis, stop the mercury at once, open the bowels, and instruct the patient to drink large quantities of water, preferably an alkaline mineral water, and to take a hot sweat bath or cabinet vapor bath every evening. A milk diet is best. Potassium chlorate may be administered for three or four days. The local treatment is that described above. The spongy gums may be painted once or twice daily with the following astringent:

℞ Tincturæ Krameriæ,
Tincturæ iodi, aa..... ℥v
Tincturæ myrrhæ..... ℥iiss

or, ℞ Tincturæ myrrhæ,
Tincturæ iodi compositæ,
Aquæ, aa..... ℥i. (Keyes.)

IV. Parasitic or Mycotic Stomatitis; Thrush.—A contagious stomatitis caused by a hyphomycetic fungus, the saccharomyces albicans, occurring chiefly in uncleanly infants in poor health, and characterized by the presence of superficial white, pinhead sized and larger spots and patches, composed principally of the mycelium of the fungus, which is demonstrable under the microscope after treatment with a drop of liquor potassæ.

It may be cured in about a week.

TREATMENT.—Correct any errors of diet (see Infant Feeding), or hygiene, etc.; and enjoin cleanliness of the mouth, milk, bottles, and nipples, artificial or maternal. Before and after each nursing, the mother's nipples should be bathed with boric acid solution, followed, before nursing, with warm water. The child's mouth should be washed after each nursing with saturated boric acid solution. The white patches should be wiped away with a soft cloth wet with a solution of boric acid, borax, or sodium bicarbonate, one teaspoonful of any of these to a tumblerful of warm water. The following may be used as a spray:

℞ Sodii boratis..... gr. x
Glycerini..... ℥i
Aquæ..... ℥ii

In obstinate cases pencil the lesions once or twice a day with formalin, 1 per cent.

V. Gangrenous Stomatitis; Noma; Cancrum Oris. A very rare, very fatal, muco-cutaneous gangrene, occurring usually in children, and as a complication of the infectious diseases, especially measles. Bad hygiene alone and mercurial stomatitis are very rare causes. The nose, external auditory canal, pudendum, and anus may be similarly affected.

TREATMENT.—Carefully remove all loose sloughs, dry the wound with lint, and rub into it sticks dipped in fuming nitric acid. Then blow on powdered iodoform, and cover with carbolized oil, 3 per cent. Thereafter use frequently, day and night, antiseptic sprays and washes, especially equal parts of alcohol and water. Formalin, 1 per cent., pot. permanganate, gr. iss in ℥ss, or iodoform are used to destroy the horrible odor. The cauterization may have to be repeated.

If this treatment is not efficacious, do not temporize, but resort promptly, under anæsthesia, to the knife or actual cautery and remove or destroy the affected tissues well outside the waxy zone. If the knife is used, follow it with the cautery, or with pure nitric or carbolic acid. Indeed, it may be best to select this mode of treatment in the beginning. Remove loose teeth, and keep the mouth clean with hydrogen peroxide, 3 per cent.

Administer concentrated liquid food, predigested if need be (see Part 11: pepsin, trypsin, and diastase), and alcoholic stimulants at frequent intervals,—½ to 1 ounce of whiskey or brandy in twenty-four hours, well diluted, to a child of one year; 3 to 4 ounces in twenty-four hours to a child of five years. Quinine and the perchloride of iron (see Part 11) are recommended. Diphtheria antitoxin in large doses (see Diphtheria) is recommended because a bacillus resembling that of diphtheria has been discovered in the diseased tissues.

The patient should be isolated.

"Plastic operations should be deferred for at least one year after the attack." (Forchheimer.)

Stone.—See Calculus.

Stools, Bloody.—See Hemorrhage, Intestinal.

Colorless.—See Colorless Stools.

Fatty.—See Colorless Stools.

Strabismus.—Gr. *στραβισμός* squint. See Motor Nerves of the Eyeball; and also Part 6, Eye Diseases.

Strain of the Heart.—See Heart-Strain.

Strangulated Hernia.—See Hernia.

Stricture.—L. *strictu'ra*, narrowing. See Stenosis.

Stridor.—L. *harsh*, whistling sound.—**Causes.**—Adenoids (the stridor disappears when the nostrils are closed); congenital malformation of the vestibule of the larynx (stridor is only inspiratory, and is relieved by intubation, but it disappears spontaneously by the end of the second year); thymus enlargement (stridor is both inspiratory and expiratory); enlarged or tuberculous lymph nodes compressing the trachea or bronchi (stridor is purely expiratory, and disappears during sleep); vertebral abscess (difficult to distinguish from thymic stridor); aneurysm of the aortic arch; mediastinal tumors; foreign bodies; spasm of the glottis; laryngeal paralysis; any form of stenosis of the larynx (see Throat Diseases), trachea, or bronchi, (see Tracheal Obstruction and Broncho-Stenosis).

Strongyloidosis.—Gr. *στρογγύλος* round. Intestinal infection with the strongyloides intestinalis, a tropical nematode worm, giving rise to dyspepsia, diarrhœa, and

anæmia, and diagnosed by the discovery of larvæ in the stools. Fig. 79.

The mother worm burrows in the mucous membrane of the upper parts of the small intestine, and is expelled with difficulty. The eggs do not appear in the fæces except during purgation. They greatly resemble hookworm eggs. The larvæ are probably

Fig. 79.—Strongyloides stercoralis magnified about 250 diameters. (After Thayer.)

ingested in drinking water or uncooked vegetables or from the soiled hands.

Treatment.—This is unsatisfactory. Thymol may be tried, as in ankylostomiasis (*q.v.*). Preti recommends glycerine, 50 grams of pure glycerine by mouth, half in capsules, and 30 grams per rectum two hours later, to be repeated after two days. Try Sulphur (Stiles).

Struma.—L. *strúma*. See Goitre.

Strumitis.—L. *strúma*, goitre + Gr. *-ιτις* inflammation. See Thyroiditis.

Stupor.—See Coma.

St. Vitus's Dance.—See Chorea, Acute.

Subacidity.—See Anacidity.

Subdiaphragmatic or Subphrenic Abscess.—L. *sub*, under + Gr. *διά* across + *φράγμα* wall; *φρήν* the diaphragm. Subphrenic abscess may be extra- or intraperitoneal. It may or may not contain gas. It is almost always due to appendicitis (retrocæcal, retrocolic, or paracolic infection, or pylephlebitis), or to liver suppuration (abscess, cholangitis, cholecystitis, pylephlebitis, operative handling of an inflamed liver, tuberculosis, cancer, gumma, actinomycosis). Other causes are: pleuritis, suppurative, tuberculous, or cancerous; pneumonia; tuberculosis; splenic abscess; gastric, duodenal, colic, or œsophageal ulcer; gastric carcinoma; abscess and cysts of the pancreas; renal abscess; pyosalpinx; spinal or costal caries; traumatism; general peritonitis treated by drainage and recumbency, when the pus gravitates toward the spleen, causing a perisplenic abscess.

Severe pain, vomiting, dyspnœa, chills, irregular fever, and emaciation occur. The signs may be those of pleural effusion, or they may be hypochondral or epigastric. The gaseous abscesses simulate pneumo- or pyopneumo-thorax. They are usually due to perforation of a gastric ulcer, and are therefore usually left-sided. Examine with the X-ray in order to see if the diaphragm is pushed upward and is immobile.

Exclude perirenal lipoma, retroperitoneal sarcoma, aneurysm, pleuritic effusion and empyema, liver abscess, and diaphragmatic hernia. In the latter affection the abdomen is incurved instead of distended.

Posterior abscesses may be explored, under general anæsthesia, by means of a long, thick needle and syringe. The needle is first introduced for three inches in the tenth interspace in the scapular or midaxillary line; and if no pus is found, the ninth, eighth, seventh, and sixth interspaces may be tried (Barnard). Pleural involvement occurs in fifty per cent. of the cases.

Treatment.—This is surgical: a transpleural incision with rib resection.

The Prognosis is serious.

Submaxillary Cellulitis.—See Ludwig's Angina.

Subphrenic Abscess.—See Subdiaphragmatic Abscess.

Suffocation.—L. *suffocátio*. See Asphyxia.

Sugar in the Urine.—See Glycosuria under Diabetes Mellitus.

Sulphæmoglobinæmia.—See Cyanosis, and Intestinal Intoxication.

Summer Diarrhœa.—See Diarrhœa in Infancy and Early Childhood.

Sunstroke or Thermic Fever; Heat Exhaustion, and Heat Cramps.—These three different conditions are caused by exposure to excessive heat, whether solar or artificial. Predisposing influences are alcoholism, overexertion, lack of sleep, overclothing, overeating (especially of animal food), constipation,

1. — *Papulo-tuberculous syphilide.*

N° 1417. Dr Hallopeau.

2. — *Hereditary syphilis.*

N° 1896 Dr Fournier.

3. — *Syphilitic roseola.*

N° 2515. Dr Balzer.

4. — *Circinate syphilide.*

N° 832. Dr Guibout.

St. Louis Hospital Museum, Paris.

Syphilitic lesions.

and a feeble constitution. One attack predisposes to others.

Thermic fever is characterized by headache, dizziness, and nausea, followed by syncope or coma and prostration, with high fever and rapid pulse. Recovery usually occurs, but mental weakness may follow, and the patient may thereafter never be able to bear even moderate heat. In severe cases, various nervous symptoms may result, *e.g.* headaches, tremor, failure of memory, loss of the power of concentration, deafness, blindness, epilepsy, paresis or paralysis of the extremities, neurasthenia, etc.

Heat exhaustion is characterized by giddiness, nausea, staggering gait, pallor, syncope, small soft pulse, shallow respiration, cold skin, and subnormal temperature.

Heat cramps are characterized by the occurrence of very painful spasm of the muscles in those who use the latter while exposed to great heat.

Thermic fever and heat exhaustion should be distinguished from alcoholic coma, apoplexy, pernicious malaria, and other causes of coma (*q.v.*).

Treatment.—In the cases with hyperpyrexia, unclothe the patient, and put him to bed in a cool place. Apply an ice-cap to the head, and employ ice-packs, ice-water baths, rubbing of the body with ice, sponging with ice-water, and ice-water enemata, in order to reduce the temperature ; but do not let the latter fall below 100° F. The hypodermic administration of quinine is recommended (see under Malaria).

Administer stimulants hypodermically, *e.g.* strychnine, camphor, caffeine (see Part 11). Bleeding may be practiced in robust patients with cyanosis; or leeches or wet cups (*q.v.*) may be applied to the spine, mastoids and temples. Saline infusions (0.9 per cent.) not above blood heat, are recommended. Resort to artificial respiration (see Asphyxia) if necessary.

In the cases with subnormal temperature, external heat should be applied.

Superacidity, Gastric.—L. *su'per*, above. See Hyperacidity.

Supersecretion, Gastric.—See Hypersecretion.

Supra-Orbital Neuralgia.—L. *su'pra*, above; *orb'ita*, track. See Neuralgia.

Suprascapular Nerve.—See Brachial Plexus,

Swallowing, Difficult or Painful.—See Dysphagia.

Sweating.—See Hyperidrosis in Part 5, Skin Diseases.

Sweating Sickness.—See Miliary Fever.

Sweats.—See Hyperidrosis, in Part 5, Skin Diseases.

Sydenham's Chorea.—See Chorea, Acute.

Syncope.—Gr. *συγκοπή* fainting. See Coma.

Syphilis.—Gr. *συς* swine + *φιλος* lover. A chronic infectious disease, caused by the spirochæta pallida (or treponema pallidum), and characterized by an initial painless sore (hard chancre), which appears within three weeks (two to six weeks) of contagion, and is soon accompanied by indolent swelling of the neighboring lymph glands (primary stage); followed after one to two (to five) months by fever, anæmia, headache, sore throat, pains in the bones and joints, worse at night, painless enlargement of the lymphatic glands, a copper-colored, polymorphous, indurated rash of slow evolution, arranged in groups, alopecia, mucous patches (pearly, slightly-raised patches upon a reddish base), moist papules and condylomata upon apposed and sweaty surfaces, frequently nephritis, sometimes iritis, perhaps nervous symptoms due to acute arteritis with thrombosis and consequent softening, acute meningo-myelitis, peripheral neuritis or periosteal lesions causing compression paralysis (secondary stage); nearly always succeeded, ordinarily after three to four years, sometimes immediately, by "tertiary" lesions, viz., arteritis, gummatous infiltrations, ulcerations, amyloid degeneration, etc., which may involve any organ or tissue of the body. Like other infectious diseases, syphilis may, in any individual case, be extremely mild, with few manifestations, or extremely severe.

Following syphilis, several so-called parasyphilitic affections may arise as sequelæ, viz., tabes, general paresis, arteriosclerosis, aneurysm, leukoplacia buccalis, vitiligo, Erb's spastic spinal paralysis, etc., etc.

In congenital syphilis there may be observed, at birth or shortly after, some of the following symptoms, viz., snuffles, due to rhinitis, lip and anal fissures, mucous patches, a multiform rash (palmar and plantar pemphigus is characteristic), onychia, a hoarse cry due to laryngeal involvement, swelling and pain at the ends of the bones, due to acute epiphysitis, enlargement of the liver and spleen, anæmia, malnutrition, etc., etc. Late congenital syphilis, however, may first appear at puberty or even later, and its typical manifestations are an interstitial keratitis, Hutchinsonian teeth (small, notched, peg-shaped upper central permanent incisors; not always present), deafness, infantilism, enlargement of the spleen and epitrochlear glands, tibial or cranial nodes, perhaps falling in of the bridge of the nose, together with any or all other tertiary lesions.

In examining for the spirochæta pallida, first cleanse the lesion thoroughly with soap and water followed by boiled water, and employ dressings and bathings of boiled water for forty-eight hours. Then dry the lesion and irritate the surface with a cotton swab until serum exudes, collect the latter in a sterile capillary pipette, blow it out with a rubber bulb upon the slide of the dark ground illuminator, cover with a cover-glass, and examine by transverse illumination. The spirochætæ appear as colorless, glistening, motile spirals.

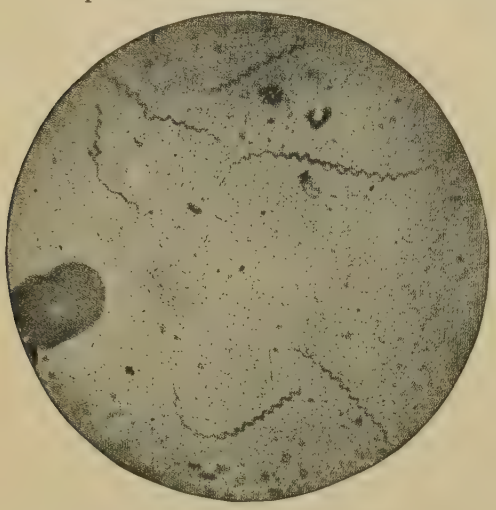


Fig. 80—Spirochæta pallida. (Simon's Clinical Diagnosis, Courtesy Lea & Febiger.)

In the absence of the dark field illumination, the same effect may be obtained by adding to a drop of the suspected serum one drop of sterile India ink, allowing the mixture to dry, covering the dried smear with oil, and examining with an oil immersion lens. To demonstrate spirochætes in chancres which are concealed beneath an inflamed foreskin or which have healed over on the surface, insert a very fine needle attached to a Luer syringe into the most indurated portion of the lesion, in the concealed cases, or into the base of healed-over surface lesions, and aspirate gently, avoiding blood, for a period of five to ten minutes, manipulating the needle point enough to macerate the tissue until a good sized drop of clear serum is obtained.

Webster recommends the Goldhorn stain. Obtain the serum as directed above, and spread it as thin as possible upon a slide. Fix the smear with pure methyl alcohol for fifteen minutes; then cover with polychrome methylene blue for three to five seconds; drain off the excess; slowly introduce, film side down, into water; keep immersed for four to five seconds; shake in the water to remove excess of dye; cover with Gram's iodine solution for fifteen to twenty seconds; wash; dry between filter paper; and examine with an oil immersion lens. The spirochæta pallida may be distinguished from other spirochætæ by the fact that its two ends lie on one side of a longitudinal line drawn through the centre of its curvatures, whereas in other spirochætæ the ends lie on this line (see Fig. 80).

To obtain blood for a Wassermann test, draw at least two cubic centimetres from a vein by means of a hypodermic syringe, or from the tip of the finger by deep puncture with a large Hagedorn needle, or, in very young children, from the heel. Allow the blood to clot in a small test tube, and after about twenty minutes, centrifuge the tube in order to obtain the clear serum. Forward the latter to the laboratory. Says Webster: "If the cells are allowed to remain in contact with the serum for any length of time, so much hæmolysis occurs that the test can not be accurately made by a distant laboratory." H. K. Mulford Co., Phila., furnish the required paraphernalia with full directions for making the Noguchi modification of the Wassermann test.

The Wassermann reaction is usually negative until at least two weeks after the appearance of the chancre; sometimes three, or four, or five weeks, or even up to the appearance of secondaries.

In the tertiary stage it is positive in 80 to 90 per cent. of the cases.

In inherited syphilis it is positive in about 90 per cent. of the cases.

In latent syphilis it is positive in about 50 per cent. of the cases.

In tabes it is positive in 60 to 70 per cent. of the cases.

In paresis it is positive in practically 100 per cent. of the cases.

It is negative under treatment.

A positive Wassermann or Noguchi reaction means syphilis in nearly all cases; a negative reaction does not exclude syphilis. It should be remembered in this connection, however, that if a specimen of blood from the same individual be submitted to different serologists, the reports received will not agree. The significance of this fact need not be commented upon here.

The Wassermann test is explained as follows: An immune serum is cytolytic toward its particular antigen. This cytolytic property, however, is destroyed by heating the serum to 50°C.; but is restored on the addition of any other normal serum. It is therefore assumed that the specific cytolytic properties of an immune serum are due to two substances (or conditions), one specific

and stable (called amboceptor or antibody), and the other common to all sera and destroyed by a temperature of 50° C. (called complement). The solution of bacteria or other foreign cells, such as red blood-cells, in an immune serum is brought about by the combined action of amboceptor and complement, which, united, combine with the foreign cells and cause their solution.

If to an immune serum, *i. e.*, one containing both amboceptor and complement, its specific antigen is added, the complement disappears as such by union with amboceptor and antigen (fixation of complement). Thus, if the serum of a syphilitic is mixed with its specific antigen (the spirochæta pallidum), the complement of the serum becomes fixed by combining with amboceptor and antigen; so that the mixture in its lack of complement is like any normal serum that has been heated to 50°C. Now, sheep cells, when introduced into a rabbit, lead to the formation of a specific antibody (amboceptor) in the rabbit, which in the presence of complement dissolves the hæmoglobin from the red blood cells of sheep (hæmolysis). If such a rabbit-serum, which is immune against sheep corpuscles, is heated to 50° C., it no longer produces hæmolysis on the admixture of sheep corpuscles. But hæmolysis is produced on the subsequent addition of any normal serum, because the latter provides the necessary complement. Suppose now that serum from a suspected case of syphilis is treated with a sufficient quantity of syphilitic antigen, and the serum thus treated is added to rabbit serum containing sheep corpuscles and anti-sheep amboceptor but no complement. If hæmolysis results, it is evident that the suspected serum is not syphilitic, because, if it were, its complement would have been fixed by the combined action of syphilitic amboceptor and antigen.

The Wassermann test is based upon the above facts. But it has been found that other antigens than syphilitic antigens (*i. e.*, colloidal lipoids contained in alcoholic extracts of normal organs) serve the purpose of fixing complement in the presence of syphilitic amboceptor. Even amboceptor may not be altogether specific, but a lipoidal proteid complex, rather peculiar to the serum of syphilitics, which, when brought in contact with other lipoids, extracted from any lipoid-rich organs, possesses the ability to absorb complement.

Thus, in certain conditons in which lipoids enter the blood, as during digestion, in acidosis, lipæmia, and after chloroform or ether narcosis, and in conditions in which the blood becomes rich in euglobulin, as in necrosing tumors pneumonia, empyema, and infectious diseases, etc., where large amounts of inflammatory exudate are rapidly resorbed, a positive Wassermann reaction may be obtained in the absence of syphilis. Therefore, says Horst Oertel, blood should never be taken for a Wassermann under these circumstances; nor should it be taken by blister or cupping, but directly from vessels, in order to avoid subcutaneous fat.

Luetin (killed spirochætæ) is of use in the diagnosis of syphilis in its tertiary stage, but rarely gives a positive reaction in the primary stage or in untreated secondary cases. In patients under treatment, the reaction is frequently positive even when the Wassermann test is negative. The luetin test is performed as follows: After cleansing and sterilizing the skin of the upper arm, 0.07 c.c. of luetin, properly diluted, is injected into but not under the skin. In twenty-four to forty-eight hours in positive cases, there appears a large, reddish, indurated papule (usually from 7 to 10 mm. in diameter), which slowly enlarges for four or five days, and then gradually disappears or else becomes more active, with the formation of vesicles and later pustules which break and become crusted. In the torpid type of syphilis, no reaction may appear until after ten days or longer, when the site of injection suddenly shows activity and goes through the same changes as seen in the pustular type. In negative cases only a very small erythematous area appears at and around the point of injection. Luetin is furnished by the H. K. Mulford Co., Philadelphia.

Prognosis.—Syphilis is curable, as a rule, when taken in hand before the onset of the tertiary stage. "Cases first treated in the tertiary stage are difficult and often impossible to cure" (Osler and Churchman). "Syphilitics may marry with safety after they have undergone three years of thorough treatment and have been without symptoms at least one year (better two years) after treatment has ceased" (Osler and Churchman). Says Keyes, after the fourth year, whether the patient has been well treated or not, the danger of marital infection is all but nil, but is not nil.

The prognosis in congenital syphilis is bad. To prevent congenital syphilis, treat the mother with protiodide pills, either continuously as some advise, or intermittently (twenty days each month) as others advise. Treatment is too late, however, if begun after the fifth month. (Pinard.)

A. Treatment of Acquired Syphilis.—A hygienic and tonic regimen is of great importance.

Enjoin fresh air day and night, adequate rest and gentle exercise, regular hours of eating and sleeping, rest before and after meals, an abundant, wholesome, but not excessive diet, regulation of the bowels, and if practicable a daily morning warm bath in a warm room, followed by a cold douche, or a cold douche while standing in warm water. The teeth and gums should be brushed before breakfast with castile soap and warm water. Carious teeth should be treated by a dentist. As a preventive of stomatitis, the mouth may be rinsed morning and night with an alkaline astringent wash such as that of Yeo, given under Stomatitis; or potassium chlorate, gr. xv to half a glass of water. Alcohol and tobacco should be avoided, especially the former. Keyes lays great stress on the necessity of abstinence from alcohol. The patient should lead a quiet life, physically, mentally, and sexually.

If there is loss of weight, prescribe an emulsion of codliver oil, or olive or cotton-seed oil. If there is anæmia, prescribe iron or arsenic. If the patient is neurotic, prescribe hypophosphites or glycero-phosphates (for all drugs, see Part 11).

The patient should be encouraged by the assurance of a good prognosis under thorough treatment. Do not neglect to impress him with the danger of infecting others through the medium of towels, napkins, drinking cups, spoons, forks, or kissing.

If the initial lesion can be positively diagnosed as syphilitic by the demonstration of the presence of the spirochæta pallida (repeated examinations every two days may be required), institute intensive constitutional treatment at once. The Wassermann reaction, it must be remembered, does not appear until the end of the second or fourth week, or even later. The greatest success in completely eradicating the disease is obtained when treatment is begun before the patient becomes Wassermann positive. The chancre itself, after a diagnosis has been made, may be excised, cauterised, or treated with calomel, 1 part, in lanolin 3 parts, or with ung. hydrargyri. (The calomel ointment is effectual as a prophylactic after suspicious intercourse if used within six hours.) Some prefer a dry dressing of calomel and bismuth, equal parts, after first cleansing the ulcer with bichloride, 1 : 1000 to 500, and drying. If the chancre becomes phagedenic, curet and cauterise it with the Paquelin cautery, nitric acid, zinc chloride, 10 per cent., or silver nitrate, and later rub in ung. hydrargyri. Employ the latter in the vagina. If the chancre is concealed by a phimosis, perform circumcision or dorsal division of the prepuce. To mouth and tonsil chancres apply daily a 10 per cent. solution of bichloride in alcohol or ether (F. Kreissl); or cleanse and dry, and touch with pure carbolic acid. (St. Clair Thomson.)

The following plan of intensive treatment is that employed by G. Thibierge in the French Army. As soon as chancre is diagnosed, administer intravenously (*q. v.*) once daily or on alternate days, for two or three doses, mercury cyanide in 1 per cent. solution in sterile, distilled water, 1 c.c. (0.01 gm.) at a dose. If the patient is weak, one may begin with a trial dose of 0.5 c.c. Following these two or three doses of mercury, administer novarseno-benzol (neosalvarsan; for contraindications, see p. 348) intravenously, 0.45 gm. in healthy men, 0.30 gm. in women; eight days later, 0.60 gm. for men; eight days later, 0.75 to 0.80 gm. In the intervals give intravenous injections of cyanide of mercury, 0.01 gm., daily or every other day, twelve to fifteen injections in all, but, preferably, no injections of mercury on the day following the arsenic. Suspend mercurial treatment on the appearance of stomatitis, colitis or bloody stools. To avoid the latter Thibierge gives opium, 0.02 to 0.05 gm., in pill form, at the time of the injection. Mercury injections should not be continued if they cause a recrudescence of albuminuria in albuminuric subjects. In bad cases (iritis, meningitis, etc.), one may venture with 2 c.c. of the mercury solution every other day, with 1 c.c. in the intermediate days.

The preliminary mercurial injections are given to lessen the toxic effects of the subsequent arsenic injections. The novarseno-benzol, whatever the dose, is dissolved in 2 c.c. of cold distilled or plain boiled water filtered through cotton-wool (Ravaut), and used at once. The concentrated solution is safer than voluminous dilutions. If toxic symptoms arise the dose should be reduced. Only light food is allowed not less than three hours before the injection of arsenic, and rest in bed on strictly liquid diet for twenty-four hours following.

In severe ulcerous skin lesions and small papulous syphilides, give five to six injections of novarseno-benzol in doses of 0.45, 0.60, 0.60, 0.75, and 0.90 gm., together with the syrup of the iodide of iron, a nutritious diet, and fresh air.

For persistent headache and for bone pains, prescribe potassium iodide, 1 to 2 gms. daily (see Part 11). A lumbar puncture may be done, and the presence of lymphocytosis calls for more energetic treatment with arsenic, *e. g.*, 4, 5 or 6 injections. The occurrence of iritis, meningitis, and

paralyses is also an indication for more prolonged treatment.

Arsenic should be used cautiously or not at all in the presence of jaundice or nephritis and care should be taken with the diet.

Serious accidents resulting from the use of arsenobenzol are (1) acute encephalitis, with severe headache, fever, facial congestion, vomiting, delirium, convulsions, coma, and death; (2) paralysis of the cranial nerves due to basilar meningitis; (3) icterus; (4) albuminuria; (5) vomiting, diarrhœa; (6) palpitations; (7) cutaneous eruptions.

Thibierge advises against the use of calomel or silver nitrate on the chancre, and merely cleanses it with boiled water and dusts on bismuth subnitrate.

Following the above intensive treatment, prescribe protoiodide of mercury pills, 0.025 gm. (gr. $\frac{3}{8}$), four times a day, for twenty days per month for three months; for the next nine months, twelve to fifteen days per month; for the following year, twelve to fifteen days every two months; for the next two or three years, forty to fifty days twice a year. Give novarseno-benzol injections on the appearance of luetic symptoms. Two months after the first course of arsenic and mercury injections a second course may be given, *e. g.*, arsenic, 0.60 gm. every eight days for two to three doses, and mercury every second day, or gray oil once a week.

Gray oil, 40 per cent., may be given intramuscularly (never hypodermically) once a week for six to eight doses every three to four months.

℞ Purified mercury..... 40 gm.
Sterilized anhydrous lanoline..... 26 gm.
Sterilized oil of vaseline, about.... 60 gm.

Dose, 7 to 8 centigrams (.07 to .08 gm.) of mercury. Calomel is too painful. The soluble preparations of mercury are inferior to the insoluble. They must be injected oftener, *e.g.*, three to six times a week.

Use a steel needle, 4 to 5 cm. long. Inject into the buttock, but avoid the neighborhood of the sciatic notch. Choose, says Thibierge, "an area the width of two fingers in height and of three fingers in width, the external border of which is 3 cm. behind the great trochanter and the lower border 2 cm. above the lower border of the trochanter; or in the upper third of the buttock." First introduce the needle alone, to see that no vessel is punctured, as would be shown by the flow of blood.

Thibierge in his treatment pays no attention to the Wassermann reaction.

Of the two older specific remedies, mercury is the most important. Some employ iodine only for the relief of headache and neuralgic pains in the secondary stage, and for the cure of lesions; others employ the mixed treatment as a routine from the very beginning. Opium should not be given.

The best mercurial preparations for internal use are the protiodide and the bichloride. Keyes prefers Garnier and Lamoureux's granules of green protiodide (gr. $\frac{1}{7}$) to the yellow protiodide (gr. $\frac{1}{4}$ to $\frac{1}{3}$), because the latter is too irritating to the bowel. Begin, says Keyes, with one granule, t.i.d., two hours after meals. On the third and fourth days give one granule after breakfast, one after the noon meal, and two after supper. On the fifth and sixth days give two granules after breakfast, one after dinner, and two after supper. On the seventh and eighth days give two granules after each meal; and so on, up to three, four, or more granules t.i.d., or until the symptoms disappear or the first evidence of hydrargyrism appears, viz., colicky diarrhœa. When diarrhœa occurs, reduce the maximum dose one-half, and continue at this dose until the luetic symptoms subside; then give the minimum tonic dose of 2 granules t.i.d. If the symptoms disappear before diarrhœa occurs, institute the minimum tonic dose at once. Continue this dosage for two years, with intermissions of a week or two if indigestion occurs. In the third year, give mercury only during the last six months. During the fourth year give no mercury if the patient has remained free from symptoms for two years; otherwise employ three months or more of treatment. In the fifth year employ the same procedure as in the fourth. In the sixth year permit matrimony " if the patient has been two years without lesions and without treatment." (Keyes.)

Instead of the protiodide, one may employ pulvis hydrargyrum cum creta, or gray powder (minimum tonic dose, gr. ii, t.i.d., up to gr. v, t.i.d., when combating lesions); or hydrargyri bichloridum (minimum tonic dose, gr. $\frac{1}{16}$); or pilula massæ hydrargyri or blue pill (minimum tonic dose, gr. iii a day); or hydrargyri tannas, gr. iv–v, t.i.d., in pill form.

℞ Hydrargyri chloridi
corrosivi..... gr. i–ii (gr. $\frac{1}{32}$–$\frac{1}{16}$ per dram)
Potassii iodidi.... ℥ii–℥i (gr. iv–xv per dram)
Syrupi sarsaparillæ
compositæ, q.s. ad ℥iv

M. Sig.—One dram, well diluted, in water or milk two hours after meals.

Soluble mercury preparations for injection:

℞ Hydrargyri chloridi corrosivi .... gr. v
Sodii chloridi..... gr. iiiss
Aquæ destillatæ..... ℥i

Dose, 15 minims or 1 c.c. (gr. $\frac{1}{6}$ of bichloride). (?)

℞ Hydrargyri biniodidi..... gr.x
Potassii iodidi..... gr.v.
Aquæ destillatæ, q.s. ad..... ℥i
Dose,

In the first year, advises Keyes, give three courses, the injections being made every other day, the first two courses lasting four to six weeks, the last course about four weeks. In the second year, give two courses of about four weeks each. In the third and fourth years, give one four-weeks course. Or the injections may be given daily until the symptoms disappear, then alternately six doses and six days of rest for the first year; three doses and nine days of rest throughout the second year.

Insoluble mercury preparations for injection:

℞ Hydrargyri chloridi mitis (washed in boiling alcohol)..... 1 part
Albolini sterilisati..... 4 parts

Sterilize in a water bath. Dose 5 minims (calomel, gr. i).

℞ Hydrargyri salicylatis..... gr. xlviii
Albolini sterilisati..... ℥i

Sterilize in a water bath. Dose 10 minims (mercury salicylate, gr. i).

℞ Hydrargyri bidestillati (dentists' mercury)..... ℥iiss
Albolini..... ℥iii
Adipis lanæ hydrosi..... ℥iss. (Gray Oil.)

Gray oil must be prepared from sterile materials under aseptic conditions, and the mercury must be triturated with the lanolin for at least two hours. Dose 2 to 6 minims.

In the first year, says Keyes, give an injection every two weeks; in the second year, every three weeks; in the third year, one injection a month during the last six months. Should a relapse of symptoms occur, resume the injections "every two weeks for three months after their cure."

The inunction method of treatment is useful in the presence of dyspepsia, diarrhœa, cachexia, and in infancy (in the latter case to avoid indigestion). Employ for inunction either the official mercurial ointment (50 per cent.) or mercury vasogen (50 per cent.), ℥ i for adults (sometimes increased to two and four drams), gr. xv–xxx for infants, dispensed in gelatin capsules, one dose to each capsule. Give the inunctions at night, into the non-hairy regions (sides of the thorax and abdomen, back, inner sides of the arms and thighs, flexor surface of the forearms, palms, and soles), rubbing a different part each night. Rub the ointment in to the point of dryness, at least thirty minutes for one dram. If another than the patient gives the inunction, he should wear rubber gloves. Give one inunction daily for six days, and on the seventh day give a hot sweat bath, preferably a vapor bath in a portable cabinet. In the first year, give daily inunctions for two or three weeks alternately with intervals of rest of five or seven weeks (six to eight interrupted courses during the year). In the second year give four to six courses of three or two weeks daily inunctions, alternating with periods of rest of two or three months. During the third and fourth years, give two or three courses. Discontinue the inunctions temporarily at the first sign of tenderness of the gums.

Salvarsan or neosalvarsan should be administered to every patient in whom it is not contraindicated. Contraindications are: disease in the fundus of the eye, advanced central nervous degeneration, functional cardiac disturbances, angina pectoris, broken cardiac compensation, arteriosclerosis or nephritis with a blood tension above 200 millimetres, hepatitis, fetid bronchitis, cachexia, the administration of other forms of arsenic within two months, the administration of sedatives within forty-eight hours. Reject any ampoule of salvarsan that is cracked, since it decomposes on exposure to the air.

The drug is best given intravenously (*q.v.*) The patient is purged the evening before, and no breakfast is allowed on the morning of the injection. The patient should lie recumbent during the injection, and for twenty-four hours thereafter. Only liquid food should be allowed for twenty-four hours after the injection. Salvarsan solution is prepared as follows: Pour 30 to 40 c.c. of sterile, freshly distilled, hot water into a sterile glass-stoppered bottle or cylinder graduated up to 300 c.c. Drop into this the salvarsan (acid hydrochloride) from its glass container which has previously been scratched with a file and sterilized in alcohol. Shake the cylinder until an absolutely clear solution is obtained. Then add, from a sterile pipette, drop by drop, a normal solution of sodium hydrate until the neutral point is reached, when the precipitate formed is entirely redissolved on shaking (approximately 0.7 c.c. (about 10 drops) of the alkali is required for each 0.1 gm. of salvarsan). If too much alkali is added, add acetic acid, 10 per cent., cautiously. Now dilute the clear yellow solution with sterile hypotonic saline solution (about 0.5 per cent. chemically pure sodium chloride in distilled water) until for 0.5 gm. salvarsan there is 250 c.c. fluid (40 to 50 c.c. of fluid for each decigram of salvarsan). If the solution is not quite clear, add the sodium hydrate solution, a drop at a time, and shake. Warm to about

37° C., before using, and place the bottle in a dish of hot water to prevent cooling.

The dose of salvarsan is 0.4 to 0.6 gm. for men; 0.3 to 0.4 gm. for women; 0.1 to 0.2 gm. for children of from five to ten years of age ; 0.02 to 0.1 gm. for infants (0.001 gm. per pound of weight). An injection may be given every two weeks for from five to seven doses. Six to twelve months later, another injection may be given in order to ascertain if a positive Wassermann reaction is thereby provoked. If not thus provoked, a complete cure may be considered accomplished. No mercury should be given for at least two or three weeks prior to the test. Resume mercurial treatment after a course of salvarsan. The patient should live quietly and simply for two weeks following the administration of salvarsan.

Neosalvarsan requires no other preparation than mere solution in sterile, freshly distilled, cold water, or well-boiled and cooled tap water, not over 22° C. (71° F.); dosage 0.60 to 0.75 to 0.90 gm. for males; 0.45 to 0.60 to 0.75 gm. for females; 0.15 to 0.30 gm. for children. (It is about one-third the strength of salvarsan; or 1.5 gm. of neosalvarsan is equivalent to 1.0 gm. of salvarsan.)

For intramuscular injections, rub up 4 to 6 decigrams (0.4 to 0.6 gm.) of salvarsan in a mortar with 2 or 3 c.c. of hot iodipin, alboline, or liquid vaseline, and inject 2 to 2½ inches into the buttock through a large-calibre needle. Intramuscular injections are more painful, dangerous, and less efficient than intravenous injections, and have been largely discarded.

The subarachnoid injection of serum salvarsanized in vivo (Swift-Ellis) or salvarsanized in vitro (Ogilvie) or mercurialized (Byrnes) is probably of no material value. Some one has suggested lumbar puncture one hour after the intravenous injection of arsenic with the idea of drawing serum into the central nervous system.

For the nitritoid crisis (respiratory embarassment, facial congestion, hypersecretion from the mucous membranes) which sometimes follows the injection of arsphenamin, Milian recommends adrenalin (*q.v.*) subcutaneously.

Potassium or sodium iodide is especially valuable in the tertiary stage, used in conjunction with mercury, and for the relief of headache and neuralgic pains in the secondary stage (gr. v–x t.i.d. for the latter purpose). Many therefore employ the mixed treatment from the beginning, using larger doses of iodide in the tertiary stage.

℞ Solutionis sodii iodidi concentrati, ℥i (gr. i to each minim).

Sig.—For men, 10 minims, for women, 5 minims t.i.d.p.c. in one-half to one glass of milk or an alkaline water, gradually increased by one minim a day up to 45–60 minims daily if need be; more than 60 minims only in urgent cases.

Some advocate big doses, up to 250 grs. daily, but such doses are probably superfluous and harmful. Continue the iodide until the tertiary lesions yield, but no longer than three or four weeks at a time, followed by a rest of two or three weeks. The rule is to increase the dose of iodide and of mercury (mercury is also demanded in the tertiary stage) until a dose is reached that will control the lesions; then to continue this dose for a while after the lesions have apparently disappeared. A biyearly course of iodide (about five weeks) for an indefinite period, is advisable in tertiary cases.

Hydrargyrism and iodism are to be avoided. The symptoms of the former are diarrhœa, indigestion, tenderness and sponginess of the gums, salivation, a metallic taste, anæmia, loss of weight, perhaps stomatitis, bloody stools, albuminuria, erythema, or polyneuritis. The occurrence of these symptoms calls for a remission of the mercurial treatment and the adoption of purgation, copious water drinking, preferably alkaline waters, and sweating by means of the hot tub bath or the cabinet vapor bath every evening (see under Stomatitis). The symptoms of iodism are indigestion, a salty or metallic taste, coryza (lachrymation, conjunctival injection, sneezing) and acne; less often frontal headache and neuralgic pains, salivation, conjunctivitis, erythema, purpura, and other rashes, tinnitus, mental depression, vomiting, diarrhœa, cough, swelling of the salivary glands, localized œdema, especially of the eyelids, rarely of the larynx.

For mucous patches, employ a bichloride mouth-wash, gr. i ad ℥vi, and paint the patches, only twice a week, with silver nitrate solution, 5 to 10 per cent., or liquor hydrargyri nitratis, pure or diluted one-half to one-fourth, or iodine, ℥ii in glycerine, ℥i. Tobacco should be interdicted. Anoint cutaneous syphilides with white precipitate ointment (Part 11), or oleate of mercury in oleic acid, 10 to 20 per cent.; or cleanse and dry the lesions thoroughly and apply calomel, or equal parts of calomel and zinc stearate, talcum, or bismuth. Cleanliness and the use of calomel dusting powders may suffice to remove condylomata; or they may be snipped off with scissors; or touched with silver nitrate, 10 to 20 per cent., or chromic acid, 50 per cent. (do not apply to a large surface); or painted with the following:

℞ Acidi salicylici..... ʒi
Tr. cannabis indicæ..... ʒi
Collodii flexilis..... ʒi

Brush late "opalescent scaly patches" with chromic acid solution, 10 per cent., or remove them with a sharp curette or the actual cautery (E. Martin). "Freeze over periosteal nodes with chloride of ethyl and apply compound iodine ointment" (E. Martin); or, apply under oil-silk twice daily for three days, if not too painful, the following:

℞ Iodi..... gr. xv-xxx
Potassii iodidi..... gr. xxx
Glycerini..... ʒi

For eye lesions, employ atropine instillations (see Iritis, in Part 6, Eye Diseases) together with mercurial inunctions or injections.

For laryngeal complications, employ in the acute stage, inhalations of steam medicated with compound tincture of benzoin (a teaspoonful to the pint of steaming water) and a spray of Dobell's or Seiler's alkaline solution (see Part 11). Prohibit talking, smoking, and alcohol. After the acute stage has subsided, one may apply weak silver nitrate solution, 5 per cent., or insufflate iodoform or iodol. Remove vegetations by means of the curette, forceps, galvanocautery, or chromic acid. Surgical measures are required to deal with adhesions, fibrous bands or membranes, and stenosis.

For nasal and pharyngeal syphilis, employ copious warm alkaline irrigations, using the anterior or posterior nasal syringes or the nasal douche and Dobell's solution. Touch ulcers about once a week with silver nitrate, gr. x–xxx ad ʒi, or chromic acid, gr. x ad ʒi. Iodoform may be dusted upon ulcers. An oily mercurial spray may be applied:

℞ Unguenti hydrargyri nitratis..... gr. xl
Olei amygdalæ,
Olei olivæ, aa..... ʒss. (St. Clair Thomson.)

Sequestra should be removed, as soon as they are loose, under cocaine anæsthesia (see Part 11), piecemeal, and in several sittings if necessary. If stenosis threatens, employ large rubber drainage tubes or Francis's dilators smeared with a mercurial ointment.

For defective voice due to perforation of the palate, employ a vulcanite or gold obturator made by a dentist.

For the correction of saddle-back nose, paraffin injections are made, in the absence of active syphilis. If the skin is adherent to the collapsed bridge of the nose, it must first be undermined. Harmon Smith injects cold paraffin (a hard paraffin mixed with alboline until the melting point is reduced to 115° F. or 46.1° C.), a special syringe being used. The danger of embolism is thereby reduced. The technique is as follows, no anæsthesia being required: Fill the sterilized syringe with the sterile paraffin from a water bath of a temperature 5° or 6° higher than the melting point of 115° F. Then place it in cold sterile water. Cleanse the skin of the nose, and have an assistant stand behind the patient and make firm pressure with his forefingers round the root and sides of the nose in order to prevent the paraffin from passing up towards the eyelids. Immerse the syringe in hot water until the paraffin winds out in a hard, thin, cylindrical thread. Then inject slowly and steadily while withdrawing the needle. Inject too little, rather than the least bit too much. Then rapidly mold the parts into the proper shape. Apply collodion to the puncture; and for any subsequent reaction make iced applications. Make no further injections for at least a month.

Says Webster: "To establish a basis for the assertion of a cure, one should insist that the following points be met: One year without treatment, without any suspicious signs, with several negative Wassermann reactions and no positive ones, and with a negative provocative Wassermann reaction and luetin test at the end of the year."

B. Treatment of Congenital or Hereditary Syphilis.—Continue to treat the child after its birth, through its mother, but if symptoms appear in the child, treat the latter directly. In an infant a few weeks old, rub about 10 grains of unguentum hydrargyri, diluted with two or three parts of vaseline, daily into the abdomen beneath the binder, or into the palms, soles, axillæ, or the inner surface of the thighs. Gray powder, gr. ¼ to ½ to i to ii, according to age, with sugar of milk, four times a day, or calomel, gr. $\frac{1}{10}$ to $\frac{1}{5}$, according to age, four times a day, may be given until the bowels are affected, and then some other preparation substituted. Kerley prefers the bichloride (tablet triturates), under one year, gr. $\frac{1}{200}$, well diluted, twice daily after meals, increased every other day by one tablet a day "until five are given daily, or until the mercury produces loose green stools." If no improvement occurs after gr. $\frac{1}{40}$ to $\frac{1}{30}$ in twenty-four hours has been given for a week, and there are no intestinal symptoms, increase the dose to gr. $\frac{1}{20}$ in twenty-four hours, or employ, besides the bichloride, inunctions of unguentum hydrargyri, gr. x, rubbed into the skin for about ten minutes daily. After an apparent cure, examine the patient every three months for evidence of recurrence. For a period of two or three years, give a course of bichloride one month

out of every three, irrespective of the occurrence of symptoms (Kerley).

In late hereditary syphilis (often the only manifestation is late malnutrition) Kerley employs the mixed treatment, *e.g.* mercury bichloride, gr. $\frac{1}{60}$ to $\frac{1}{20}$, according to age, t.i.d.p.c., well diluted, with potassium iodide separately, well diluted in milk, enough "to produce the characteristic coryza," sometimes as much as 12 to 20 grains daily (one minim of a saturated solution contains one grain). To avoid indigestion, the iodide is given for about ten days, and then withdrawn for about five days, and so on. After the symptoms have disappeared, the mercury and iodide are given alternately for ten days each. After an apparent cure, the patient is examined every three months for years, and treated for three or four weeks two or three times a year, "during the entire growing period." (Kerley.) Says Holt: "The iodide is usually well borne by children, and may be given in almost any desired dosage. In infancy it is rare that more than 20 grains daily are required, but in older children the necessary amount may be from one to two drams daily." It is given only for tertiary manifestations.

Give also two or more injections of salvarsan, preferably, in older children, into a vein. The dose is 0.1 to 0.2 gm. for children of from five to ten years of age; 0.03 to 0.05 gm. for infants (0.001 per pound of weight). In young children the injection is given into the outer part of the buttock, high enough to avoid the sciatic nerve.

Give codliver oil, maltine and iron, if required.

For local lesions, employ ammoniated mercury, gr. xv-xx to the ounce of cold cream; or black wash; or dry, and dust on calomel mixed with two parts of starch or talcum. Employ silver nitrate, gr. x ad ℥i, about once a week for fissures and ulcers of the mucous membrane. Employ nitric acid or the acid nitrate of mercury for phagedenic ulcers of the palate or nose.

Syringomyelia.—Gr. σῦριγξ tube + μυελός marrow. An uncommon chronic nervous affection, appearing usually in the second or third decade of life, often associated with congenital anatomical defects, and characterized anatomically by the presence of a cavity surrounded by gliomatous tissue in the region of the central canal of the spinal cord, and clinically by the occurrence of a slowly progressive paralysis of the amyotrophic type, with more or less spasticity, usually the retention of the tactile sense but loss of the pain and temperature senses, and a liability to trophic changes (glossy skin, bullæ, Charcot's joints, necrosis of skin, muscle, bone, etc.), with later, perhaps, functional bladder and rectal disturbances. The process may extend to the bulb.

In some cases the spasticity predominates, in others the amyotrophy. Retention of tactile and loss of thermic and painful sensations is not always present; and trophic changes may not occur. In such cases the diagnosis of tumor is apt to be made.

Prognosis.—The affection often comes to a spontaneous standstill, and the patient may live many years.

Treatment.—Instruct the patient to guard carefully against injury and skin infection and the consequent production of trophic sores, and to avoid overexertion or fatigue. Prolonged rest is very beneficial. Employ massage and faradism for atrophied muscles (see under Poliomyelitis); massage and passive movements for spastic muscles. Treat trophic sores aseptically and support affected joints (see Arthropathies). Moderate röntgentherapy (*q.v.*) is recommended. The rays may be applied to the spine and bulb at the affected levels once or twice a week. Local spinal decompression by means of a laminectomy has proved beneficial.

Syringomyelocele.—Gr. σῦριγξ tube + μυελός marrow + κήλη tumor. See Spina Bifida.

System Diseases, Combined.—See Combined System Diseases.

Tabes Dorsalis.—See Ataxia, Locomotor.

Tachycardia.—Gr. ταχύς swift + καρδία heart.

Etiology.—Emotion; mental or physical shock; physical exertion; hysteria; neurasthenia; fevers; convalescence from fevers (typhoid, influenza, malaria, the exanthemata, etc.); the menopause; reflex irritation due to uterine or ovarian disease; gaseous distention of the stomach; tea and coffee; tobacco; thyroid medication; exophthalmic goitre or hyperthyroidism; gout; myocarditis (cardiac syphilis, coronary sclerosis, etc.); pressure upon the vagi; pressure upon the medulla by a clot or tumor; a normal rate of 100, or even more.

Auricular flutter is a condition characterized by the occurrence of very rapid auricular contractions (above 200) of normal rhythm, with consequently a rapid ventricular rate, which, however, is slower than the auricular rate (usually one-half), due to heart-block (see Arrhythmia: Auricular Flutter.) The condition is not necessarily serious.

Treatment.—Consider the cause. Enjoin correct hygiene: regular hours of eating and sleeping, rest before and after meals, a bland moderate diet, excluding tea, coffee, alcohol, and tobacco, regulation of the bow-

els, fresh air day and night, adequate rest and exercise, a daily morning warm bath in a warm room, followed by a cold spinal douche and rubbing, the avoidance of all excesses, including sexual indulgence.

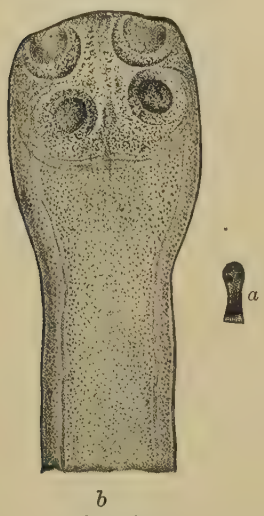
Nux vomica, ℞xx, well diluted, t.i.d., may be prescribed as a heart tonic. Forchheimer well recommends ovarian extract, gr. v t.i.d., for women. The bromides and valerian (see Part 11) are useful in nervous cases.

Persistent tachycardia due to auricular flutter calls for digitalis, which, after the condition has come under control, may have to be continued indefinitely in small but sufficient dosage. For the treatment of an attack of paroxysmal tachycardia, see under Arrhythmia.

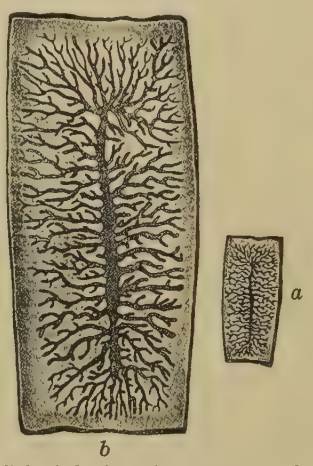
killed by thorough cooking or salting or refrigeration at 15° F. for 6 days. This tapeworm is distinguished from the tænia solium by pressing a segment between two glass sides and counting the lateral branches of the uterus. Figs. 81 to 86.

The tænia solium (armed or pork-measle tapeworm) is not common. The adult intestinal worm develops from the larva or cysticercus celluosæ derived from the ingestion of measly pork, hogs being infected by ingesting eggs in human fæces. The cysticercus cellulosæ is killed by thorough cooking, but not by cold storage as is the cysticercus bovis. This form of tæniasis is dangerous, because if the eggs should gain access to the human stomach, either from without or through vomiting, cysti-

Fig. 81.



Head of Tænia saginata: *a*, natural size; *b*, magnified eleven times.



Single link of Tænia saginata: *a*, natural size; *b*, magnified four times.

Eggs of Tænia solium, magnified 470 times: *a*, under high power; *b*, under low power.

Tæniasis.—L. *tæńia*, a flat band or tape. (See Tapeworm Infection.)

Tailor's Cramp.—See Tetany.

Tapeworm or Intestinal Cestode Infection; Tæniasis.—Gr. κεστός girdle + εἶδος form; L. *tæńia*, a flat band or tape. There are at least nineteen different species of intestinal cestode or tapeworm, of which the most common are the tænia saginata, tænia solium, dibothriocephalus latus, and tænia or hymenolepis nana.

The tænia saginata (flat, unarmed, or hookless, or beef-measle tapeworm) is the commonest. The adult worm lives in the human intestine, and is contracted by eating rare beef (especially the tongue and muscles of mastication) that is infected with the larva or cysticercus bovis. Cattle become infected by ingesting eggs in human fæces. The cysticercus dies usually within three weeks after the death of its host. It is also

cercosis or infection of the muscles and solid organs including possibly the brain and eye, will result. Therefore it should be treated promptly.

The dibothriocephalus latus, or broad (or fish) tapeworm is not common (Fig. 83). The adult intestinal worm is contracted by eating raw, under-done, or smoked fresh-water fish (salmon, pike, turbot, perch, trout, grayling, etc.) that contain the larvæ.

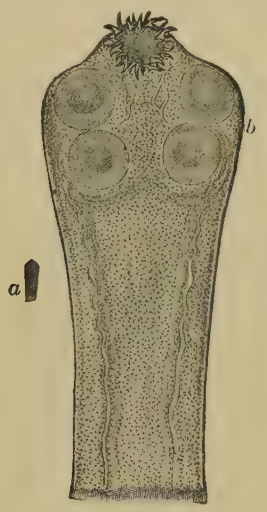
The hymenolepis nana or dwarf tapeworm is common in children in certain localities.

The symptomatology of intestinal cestode infection is very variable—abdominal pain, gastro-intestinal indigestion, and pruritus ani being the commonest symptoms. The dibothriocephalus latus causes a severe anæmia of the pernicious type.

The diagnosis is made by the discovery of the eggs and segments of the worm in the stools.

Treatment.—For three days keep the patient on a light diet, giving on the third day only liquids, and each evening, except the third evening, give castor oil, one to two tablespoonfuls, followed, if necessary, by a saline in the morning, one or two tablespoonfuls, or an enema. On the third evening give some other laxative besides castor oil, because oil favors the absorption of male fern. Or the following prescription may be used:

Fig. 82.



Head of Tænia solium: *a*, natural size; *b*, magnified 18 times.

Single segment of Tænia solium: *a*, natural size; b, magnified 3½ times.

Fig. 83.

Head of Bothriocephalus latus: *a*, natural size; *b*, magnified 17 times.

Links of Bothriocephalus latus, natural size.

Egg of Bothriocephalus latus, magnified 470 times.

℞ Magnesii sulphatis..... ℥ii
Spiritus chloroformi..... ℥iii
Aquæ, q.s. ad..... ℥vi

M. Sig.—A tablespoonful in water t.i.d., one hour a.c.; with a soapsuds enema at night, if necessary.

At nine o'clock on the morning of the fourth day, after perhaps a little hot coffee to obviate nausea, nothing else, give fresh ethereal extract or oleoresin of male fern:

℞ Oleoresinæ aspidii..... ℥i
Shake well, and div. in caps. viii.

Sig.—Four capsules (uncapped) with half a glass of hot water, at 9 A. M., and four capsules (uncapped) with hot water, at 10 A. M. (For the dosage for children, see Part 11. The drug may be dispensed in glycerine, syrup, or honey, ℥ss.)

Two hours later, at 12 M. give a full dose of salts, magnesium or sodium sulphate, ℥ss, or 3 tablespoonfuls of the above magnesium sulphate mixture, or half a bottle of magnesium citrate, in order to drive the male fern through the intestinal tract and lessen the danger of too much absorption of the drug. The patient should lie quiet while taking the treatment, and may take lemon juice, iced tea, or black coffee to combat nausea. The contents of the bowel should be passed into a vessel containing warm water, preferably a sitz-bath, for if the vessel is cold, the worm may suddenly retract and break, and the head remain in the bowel. Give a warm salt water enema if the worm is not all expelled.

Symptoms of male fern poisoning are vomiting, diarrhœa, transient or permanent blindness, jaundice, stupor, collapse, convulsions, rarely tetany. Administer strych-

nine, but no alcohol, wash out the stomach, and give saline purgatives with lots of water.

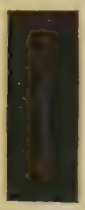


Fig. 84.—Tænia nana. Natural size.

Do not repeat the treatment within three or four months.

Other usually less efficient but useful anthelmintics are the following:

Pelletierine tannate (alkaloids derived from pomegranate), gr. vi, mixed with a little water, taken in one dose, fasting, following in one-half to one hour by a full dose of castor-oil or magnesium citrate. To avoid very unpleasant nausea and vertigo, etc., the patient should remain recumbent. This drug should never be given to children, says Forchheimer.

Pepo (pumpkin seed; must be absolutely fresh), ℥ ii–iv of the powdered seed mixed with honey, followed in two hours by a saline cathartic. Owing to its innocuousness, it is best to try this first with children. It is not always effectual, however.

℞	Granati	℥ii
	Aquæ	Oiss
	Pepo (deprived of the outer coats),	℥i
	Oleoresinæ aspidii	gr. xxx

Boil the granatum in the water down to seven ounces. Beat the pepo to a paste with finely powdered sugar. Make the male fern into an emulsion with acacia and the decoction of granatum. Then add to the paste of pepo, and flavor with syrup up to nine ounces.

Sig.—Take one-third of the above in the morning, after light diet and a laxative on the previous day. If not successful, take the second and third portions at intervals of three hours. Pass the worm sitting in a tepid sitz-bath. (Potter.)

Thymol (Part 11) is reported efficacious.

These anthelmintics should be preceded and followed by cleansing of the bowels.

Contraindications to tapeworm treatment are: gastritis, enteritis, grave heart or kidney disease, debility, convalescence from typhoid fever, or an abdominal operation, or operation for cataract, recent apoplexy, pregnancy, the puerperium, lactation, menstruation, tendency to hæmoptysis, status lymphaticus. The tænia solium and dibothriocephalus latus, however, should be expelled as soon as possible. The tapeworm dies in six or seven years.

Fig. 85.

Head of Tænia cucumerina: a, natural size; b, magnified seventy times.

Link of Tænia cucumerina: a, natural size; b, magnified eight times.

Cocoon with eggs of Tænia cucumerina magnified 100 times.

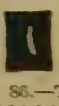


Fig. 86.—Tænia echinococcus, natural size.

Telegrapher's Cramp.—See Cramps, Professional.

Temperature, Elevated.—See Fever.

Tenth Nerve.—See Vagus Nerve.

Tetanoid Chorea.—See Chorea, Tetanoid.

Tetanus; Trismus; Lockjaw.—Gr. *τέτανος* from *τείνειν* to stretch; *τρισμός* lockjaw. A toxæmia due to wound infection with the

tetanus bacillus, and characterized by an incubation period of from one to twenty (to twenty-seven) days, followed by restlessness, insomnia, slight difficulty in swallowing, starting at noises, bright light, or sudden draughts, sweating, a tonic spasm or rigidity, and increased reflex irritability, of first the muscles about the wound, causing local induration and pain, then the masseters and muscles of the neck, or the muscles of the thorax, and eventually, in many cases, other muscles of the body, the muscular rigidity being occasionally interrupted by convulsions which may be provoked by external irritation.

The tetanus bacillus inhabits manure and garden soil. It is anaerobic and therefore thrives best in closed wounds. Fourth of July wounds are particularly dangerous. The organism does not enter the blood, but remains and multiplies in the tissues at the site of inoculation, and the incubation period represents the time required for the toxin to travel along the nerves to the centres.

Prognosis.—If the patient survives the first four days, he has a chance of recovery. The prolonged or chronic cases are marked by remissions and exacerbations, and death may occur in one of the latter. The mortality is about 60 to 80 per cent. The longer the incubation period, the better the prognosis.

Prophylaxis.—Any suspicious wound should be freely opened and forcibly irrigated with hot sterile water, and all foreign material removed. It should then be further cleansed with hot peroxide of hydrogen, and cauterized with tincture of iodine or pure carbolic acid followed by alcohol, or better, soaked for an hour continuously in a solution of carbolic acid, 1.5 per cent., or iodine trichloride, 1 per cent., or tincture of iodine, 3 per cent., or silver nitrate, 1 : 1000, the lips of the wound being held apart by sterile gauze. The carbolic solution is perhaps the best. Then dry antitoxin powder or iodoform may be dusted into the wound, or balsam of Peru may be poured in. Tetanus antitoxin should be administered at once in the neighborhood of the wound, either intramuscularly or subcutaneously, 500 to 1500 units; and the injection should be repeated every seven days, two to four times in all, in the presence of wound sepsis (see Anaphylactic shock). A dose should be given two days before any secondary operation on a healed or unhealed wound, for fear of lighting up a latent infection. It is said to be harmless in any amounts.

Immunity lasts only about ten days.

Treatment.—Excise the wound of entry en masse, or burn it out thoroughly with the actual cautery. Put the patient to bed in a very quiet, darkened room, and handle him very gently in order to avoid reflex excitation. Keep the bowels, skin, and kidneys active, to favor the elimination of toxin. A hot bath or hot pack may be given two or three times a day for thirty minutes at a time. Normal saline solution (0.9 per cent.) should be given either subcutaneously or per colon by the drop method, 500 c.c. every six hours for several days. Water should be drunk freely. Concentrated liquid nourishment (milk, eggs, and beef juice) should be administered every hour or two, by rectum if necessary (see Rectal Feeding). "A very good plan," say Bloodgood and McGlannan, "is to mix the nutrient enema (200 c.c. of peptonized milk, Part 11, with two eggs) with the salt solution (*q.s.* ad 500 c.c.) and give it by the drop method." Give stimulants when required, *e.g.*, camphor, gr. ii, in ether, ♏xv; or whiskey or brandy, 4 to 10 to 16 ounces daily. The latter is also useful as a sedative and muscular relaxant. Sedatives should be administered for the purpose of relaxing the muscular rigidity and preventing convulsions, and they should be given in doses sufficient to accomplish this result:

Morphine and atropine in large doses. (For all drugs see Part 11).

Chloral and bromide, well diluted, per rectum. For adults, chloral, gr. xx–xxx, and bromide, gr. xl–lx, every four hours. For infants, gr. ii–iv, every hour if required; double the dose for older children. For infants, sod. bromide may be given per rectum in mucilage of acacia, in doses of gr. viii–x every three hours.

Chloroform or ether, by inhalation, for convulsions.

Carbolic acid, 2 per cent. aqueous solution, 1 c.c, (gr. ⅗) subcutaneously every two or three hours. as required to control convulsions (Bacelli); 80 to 100 c.c. a day may be given (Sainton). Say Bloodgood and McGlannan: "In mild cases the dose should not exceed 3 grains of phenol in the first twenty-four hours, but the daily quantity is to be rapidly increased to two or three times this amount." It may have to be continued for three or four weeks or longer.

Curare, gr. ½, hypodermically, every six hours.

Antitetanic serum causes a neutralization of the tetanus toxin while the latter is still circulating in the blood, but not after the toxin has become attached to the nerve cells. This is the explanation given for the disappointing results when the serum is administered after trismus has once set in. However, favorable results are reported after big doses: 5000 to 10,000 U. S. Army units intramuscularly (absorbed in twelve hours), 3000 to 5000 units subcutaneously

(absorbed in about forty-eight hours), and 3000 to 5000 units intraspinally (absorbed immediately), by lumbar puncture (*q.v.*), first withdrawing an equal amount of spinal fluid (about 20 c.c.) Inject slowly. Repeat the intraspinal injection daily for three to five days. Repeat the other injections daily or oftener, until the symptoms abate; then reduce the size and frequency of the dosage. After intraspinal injections the foot of the bed should be raised so that the serum may gravitate up the cord. Another method of administration is by intraventricular injection. "A skin and periosteal flap is reflected from the anterior portion of the skull and the cranium opened by a small trephine, about an inch from the bregma, just behind the coronal suture. Through this opening a long needle is passed vertically, 2 or 2½ inches into the brain substance. When the ventricle is reached, fluid will flow from the needle. The serum is then injected slowly; 1500 units is the usual dose, repeated if the convulsions continue." (Bloodgood and McGlannan.)

"Rogers' (successful) plan of treatment consists in the injection of 10 to 20 c.c. of antitoxin subcutaneously in the neighborhood of the wound, of 10 to 20 c.c. intravenously (*q.v.*), with the injection of 5 to 20 minims into the nerves of the axillary plexus, if the wound is in the upper extremity, or into the crural, sciatic and obturator nerves if the wound is in the lower extremity. In addition to this, he injects 10 to 20 c.c. into the nerves of the cauda equina; and if the patient's life is in imminent danger, in order to protect the vital centres of the respiration and the circulation, 20 to 30 minims are injected directly into the cord between the sixth and seventh cervical vertebræ" (Frazier). Says Rogers: "In lumbar puncture it is necessary, etc. (See p. 501, Keen, Vol. I, note at bottom of page.) (Quoted by Frazier in Keen's Surgery.) (See also Serum Antitetanicum, in Part 11.)

The use of brain emulsion is said to be equally as effective as antitoxin: 10 gms. of freshly killed dog, rabbit, sheep, or pig's brain is rubbed up in about 30 c.c. of sterile normal saline solution (0.9 per cent.); the emulsion strained under slight pressure through cheesecloth, and injected subcutaneously, for the purpose of binding the tetanus toxin. The injection is repeated every two or three days, as required.

Tetany; Spasmophilia; Hypertonia.—A rare affection, characterized by a state of neuro-muscular hyperexcitability, which is manifested by bilateral, continuous or intermittent, tonic, mostly flexor spasms of the extremities, particularly the hands (obstetrical or pen-holding hand; carpo-pedal spasm). The spasms last anywhere from fifteen minutes to even two weeks. They may be induced by tapping or pressing upon the nerves, very light electrical stimulation, temperature changes, over-exertion, exhaustion, and emotion. Laryngeal, respiratory, ocular, and vesical spasm may occur. In infancy, tetany is associated with rickets, laryngismus stridulus, and general convulsions. Tapping of the facial nerve near the parotid causes contraction of the facial muscles (Chvostek's sign). Compression of the nerve trunks of the upper arm causes a carpo pedal spasm (Trousseau's sign).

The disease is possibly due to a lack of calcium in the blood, secondary to parathyroid insufficiency. (MacCallum.)

Exclude hysteria (which is usually unilateral) and simulation.

Etiology.—Idiopathic (tailor's or shoemaker's cramp; epidemic, possibly infectious tetany); gastro-intestinal disorders (dyspepsia, hyperacidity, gastric dilatation, gastric lavage, worms, diarrhœa, intussusception: producing possibly an intoxication); acute infectious diseases (typhoid fever, measles, scarlet fever, influenza, pertussis, bronchopneumonia, rheumatism, cholera); poisoning with chloroform, morphine, ergot, lead, phosphorus, alcohol; maternity (pregnancy, parturition, lactation); uræmia; nervous disorders (syringomyelia, brain tumor, etc.); exophthalmic goitre; extirpation or disease of the parathyroids; in children —rickets, gastro-intestinal disorders, and acute infections.

Prognosis.—In gravida cases, in bacterial and chemical intoxication, and in children, the prognosis is usually good. In gastric cases the prognosis is bad unless an operation is done. Recurrences are frequent. Sudden death may occur.

Treatment.—Put the patient to bed in a quiet room, and attend to any possible etiological factor. Keep the bowels active. Warm or cold sponging, repeated two or three times a day, is recommended for the relief of the spasm, especially in children; also massage, galvanism, the spinal ice-bag, and the following sedatives, viz.—bromide (gr. ii every two hours, at least six doses in twenty-four hours, to a child of one year or younger), chloral, chloretone, hyoscine, belladonna, antipyrin, valerian, phenacetin, aspirin, cannabis indica (see Drugs, Part XI).

Administer thyroid and parathyroid gland

and calcium salts. Milk, whey, and eggs are rich in calcium. Fresh parathyroid gland may be injected subcutaneously in the form of an emulsion. Calcium chloride may be injected or given per rectum. Transplantation of the parathyroids may be tried.

In infants, the use of parathyroid or of calcium has apparently no influence, says Holt; and Osler says, "It is a mistake to call instances of carpo-pedal spasm of children true tetany"; but some record good results with large doses of calcium lactate or chloride, gr. v+every three hours to a one-year-old.

S. V. Hoes prescribes atropine, 1 : 1000 solution, 1 drop in each bottle of food, increased if there is no improvement in forty-eight hours, to 2 drops in each bottle, and in another forty-eight hours, if necessary, to 3 drops, and later, if necessary, 4 drops or more. Reduce the dosage occasionally, or discontinue the drug; but resume it on the recurrence of symptoms. Months of treatment may be required. Procure breast milk for the baby, if possible.

Gastric cases demand operation. Any abnormality found should be corrected: in simple cases, pyloroplasty or preferably gastro-enterostomy; in malignant cases, partial gastrectomy or gastro-enterostomy; in hour-glass contraction, gastro-gastrostomy combined with gastro-enterostomy performed in the larger pouch (Mayo Robson). Systematic gastric lavage is of some service.

Thermic Fever.—Gr. *θέρμη* heat. See Sunstroke.

Third Nerve.—See Motor Nerves of the Eyeball.

Thomsen's Disease.—See Myotonia.

Thread-Worm Infection.—See Oxyuriasis.

Three-Day Fever.—See Phlebotomous Fever.

Thromboangitis Obliterans.—Gr. *θρόμβος* clot; *ἀγγεῖον* vessel + *-ιτις* inflammation. See Gangrene, Part 5.

Thrombosis, Arterial.—Gr. *θρόμβος* clot. See Gangrene, in Part 5, Skin Diseases.

Cerebral.—See Apoplexy.

Venous.—For etiology and symptomatology, see Phlebitis.

Treatment.—Elevate and immobilize the affected limb (to avoid embolism) by bandaging it to a pillow folded about it. Raise the bedclothes from the limb by means of a cage. Warn the patient against exertion and sudden movements, such as hard coughing, straining at stool, etc. Give sedatives for the prevention of the former and laxatives for the latter. For pain, administer morphine and apply hot or cold compresses wet with belladonna liniment, or lead and opium wash (see Part 11), or the ice-bag. Ichthyol in lanolin, 30 per cent., or belladonna ointment is recommended to be applied along the course of the vein.

In septic cases, the vein may be ligated proximally to the site of infection; or the vein may be incised, the clot turned out, and drainage established; or the infected vein may be excised.

After three weeks absence of fever, provided there is no local tenderness, and the œdema is diminishing, begin to employ gentle passive movements. At the end of a week, increase the movements and begin to massage the muscles, avoiding the site of thrombosis. After another week, remove all splints, and after another week, employ active movements; and later get the patient out of bed. For the œdema which persists after the patient is gotten up, apply a light supporting (crepon Velpeau) bandage or elastic stocking, and employ massage and electricity, even for weeks or months. For persistent pain, employ warm baths, tincture of iodine, and electricity: 25 to 50 milliampères for fifteen to twenty minutes daily.

In idiopathic recurrent cases, it may be advisable to excise the affected vein if it is superficial. (George Blumer.) (See also Gangrene, Part 5.)

Thrush.—See Stomatitis, Parasitic or Mycotic.

Thymic Asthma.—Gr. *θύμος* thymus; *ἄσθμα* panting. See Thymus Enlargement, following.

Thymus Enlargement.—Appreciable enlargement of the thymus gland is manifested by an inspiratory and expiratory stridor resembling asthma. Sudden death sometimes occurs. The condition is best diagnosed by radiography, less certainly by inspection and percussion. The latter reveals an area of dulness over the upper sternum, particularly to the left, which merges with the cardiac flatness, and shifts upward with extreme retraction of the head and neck. For other causes of stridor, see Stridor.

Etiology.—The usual condition is a hyperplasia due to unknown causes or to congenital syphilis, rickets, etc.; rarely is it congestion and œdema due to an acute infection, general circulatory failure, or trauma. The gland may be the seat of a new growth. Associated conditions are: status lymphaticus, adenoids and enlarged tonsils, rickets, scurvy, congenital syphilis, anæmia, anencephaly, cretinism, myxœdema,

exophthalmic goitre, acromegaly, epilepsy, leukæmia, Hodgkin's disease, Addison's disease, acute infections, myasthenia gravis.

Prognosis.—This is probably grave, as a rule.

Treatment.—During an attack of stridulous dyspnœa, open the bowels freely, and if necessary perform intubation (*q.v.*) with a very long tube. If it should be deemed advisable to remove the enlarged thymus, proceed as follows: Make a median incision about an inch long through the skin and subcutaneous tissue of the suprasternal fossa after the skin has been drawn down over the sternum; rake apart the deep fascia, the sternohyoids and thyroids with blunt double-hooked retractors; and clear the loose capsule from the gland. Draw out the gland as far as possible, and stitch it to the fascia over the sternum. If necessary, a portion may be resected, but the whole gland should not be removed, for fear of rickets (Warthin). Always have ready, before operating, a long intubation tube and tracheotomy instruments (see Diphtheria).

Warthin gives the following rules for the prevention of thymic asthma:

1. Keep the head high, using mechanical means, if necessary; but do not throw the head backward.
2. Avoid excitement.
3. Avoid very warm or cold baths and sea bathing.
4. Avoid infectious diseases.
5. Observe good hygiene.
6. Avoid anæsthesia and operations. When these are required, have tracheotomy instruments and a long tube on hand.

Thymus feeding, antirachitic treatment, antiluetic treatment, and the X-rays may be tried, the latter cautiously. (Chiefly after Warthin.)

Thyroid Enlargement.—Gr. *θυρεός* shield + *εἶδος* form. **Causes.**—Simple goitre, diffuse, nodular, cystic, etc., (see Goitre, Simple); exophthalmic goitre; malignant neoplasms—carcinoma and sarcoma; echinoccus cyst; all febrile states; traumatism; certain poisons; inflammation, acute or chronic (see Thyroiditis,); puberty; menstruation; pregnancy.

Malignancy is difficult or impossible to diagnose in the early stage, when an operation may be curative, therefore always bear it in mind, especially in goitres appearing after the age of thirty-five years, and in those of sudden and rapid growth. Try iodothyrin and arsenic (see Part 11) for inoperable cases of malignancy, and always employ radium (*q.v.*) or the X-ray (*q.v.*) preferably the former. Map out the surface of the tumor and adjacent lymphatic area with a skin pencil into sections. Cut a window in a piece of lead, 1 cm. thick, corresponding to the size of these sections, and mould it to the surface of the tumor, over 30 layers of lint. Use a 3 mm. lead filter for the radium, in order to cut out practically all of the β rays. Attach the tube enclosed in rubber tubing in place by adhesive plaster. Give, say, twenty-four hours' exposure to each area, on successive days, until the whole tumor is irradiated.

Thyroid enlargement in pregnancy may mean thyroid insufficiency and compensatory hypertrophy; therefore thyroid extract in small doses (Part 11) may be tried.

Thyroidism, Hyper-.—See Exophthalmic Goitre.

Hypo-.—See Hypothyroidism.

Thyroiditis and Strumitis.—Strumitis is inflammation of a goitre.

I. Acute Inflammation.—The symptoms are swelling, pain, tenderness, fever, pain on swallowing, and sometimes difficulty in breathing and swallowing. The symptoms usually subside in a few days; but sometimes suppuration occurs.

Etiology.—Infectious diseases (typhoid fever, rheumatic fever, malaria, cholera, etc.); chemical poisons; alcoholism; traumatism.

Treatment.—Put the patient to bed on light diet, and open the bowels by means of calomel, followed by a saline, or castor oil (see Part 11). Apply cold or hot fomentations, or three or four leeches along the lower border of the inflammation. Make a free transverse incision along the lower margin if suppuration occurs. If a fistula remains, the affected lobe should be excised.

II. Chronic Inflammation.—Tenderness is present.

Etiology.—Acute inflammation; tuberculosis; syphilis; actinomycosis; echinococcus disease; alcoholism; prolonged iodine medication.

Treatment.—Attend to the cause. Antiluetic treatment may be tried. Unguentum hydrargyri biniodidi (gr. xxx in lanolin, ℥i) may be rubbed in daily for periods of four or five days, the inunctions being interrupted when the skin becomes irritated. Thyroid extract, gr. ss, gradually and cautiously increased to gr. ii, t.i.d., may be tried for two or three weeks. Resection of the diseased lobe may be required. It should be done if dyspnœa is present.

Thyrotoxicosis.—See Exophthalmic Goitre.

Tic; Tic Convulsif.—Fr. See Habit Spasm.

Douloureux.—See Neuralgia, Trigeminal.

Tic Impulsive.—See Habit Spasm.

Tick Fever, African; African Relapsing Fever.—See Relapsing Fever.

Rocky Mountain.—See Rocky Mountain Spotted Fever.

Tinnitus.—See Part 7, Ear Diseases.

Tongue Diseases.—Atrophy due to hypoglossal paralysis, see Hypoglossal Nerve.

Black Tongue, see Part 5, Skin Diseases.

Furrowed Tongue, see Part 5, Skin Diseases.

Geographic Tongue, see Part 5, Skin Diseases.

Glossitis, including Lingual Ulcers, see Glossitis.

Glossodynia, see Glossodynia.

Glossodynia exfoliativa, see Part 5, Skin Diseases.

Leukoplakia, see Part 5, Skin Diseases.

Lingual tumors and cysts (*q.v.*).

Macroglossia or hypertrophy (*q.v.*).

Tonsillitis.—See Part 9, Throat Diseases.

Torticollis.—See Part 10, Orthopædics.

Tower Head.—See Oxycephaly.

Tracheal Obstruction.—Gr. τραχεῖα rough.

Etiology.—Foreign bodies (see Part 9, Throat Diseases); tumors (benign papillomas; malignant growths); scleroma; cicatricial stenosis; necrosis of cartilage and exuberant granulation formation due to traumatism; œdema secondary to acute or chronic chondritis (caused by trauma, syphilis, tuberculosis, typhoid fever, diphtheria, influenza, etc.); fracture of the trachea; compression caused by aneurysm, enlarged thyroid, enlarged thymus (*q.v.*), mediastinal malignant growths, vertebral abscess, enlarged luetic or tuberculous glands, effusions; angioneurotic œdema; retention of pus and secretions.

Treatment.—Benign papillomata may be removed through the mouth by means of bronchoscopy. Scleroma is cured by means of radiotherapy, the "larynx being extensively laid open for the purpose." (Jackson.)

Cicatricial stenosis of the cervical trachea is "very successfully treated by the operation of laryngo-tracheotomy," as described by Chevalier Jackson in Musser and Kelly: Practical Treatment, Vol. III, p. 212.

Cicatricial stenosis of the deeper trachea is "amenable only to palliative treatment by the long tracheal cannula," or by "Bruning's and von Schroetter's tracheal and bronchial intubation tubes, inserted with the aid of the bronchoscope." (Jackson.)

Exuberant granulations are "quickly cured by the endoscopic application of a 10 per cent. silver nitrate or resorcin solution."

For œdema, apply the ice-bag externally and have the patient inhale a spray of adrenalin. 1 : 5000. The œdematous tissues may be incised through the bronchoscope. Prompt tracheotomy (*q.v.*) is sometimes demanded.

In the retention of pus and secretions, perform tracheotomy promptly, if immediate relief is not obtained by inverting the patient (after Chevalier Jackson, *q.v.*, on bronchoscopy in Musser and Kelly: *Practical Treatment*, Vol. III, p. 216).

Tracheitis.—See Bronchitis.

Tracheotomy.—Gr. τραχεῖα trachea + τέμνειν to cut. See under Diphtheria.

Transfusion of Blood.—See Blood Transfusion.

Traumatic Ecchymosis.—Gr. τραῦμα wound; ἐκ out + χύμα a flow. See Contusion.

Traumatic Neuroses.—See Hysteria and Neurasthenia.

Trembles.—See Milk-Sickness.

Tremor.—L. from *trem'ere*, to shake.

Etiology.—Nervousness; cold; fatigue; neurasthenia; hysteria; senility; heredity (hereditary or familial tremor beginning in infancy); paralysis agitans; fever and toxæmia; toxic influences (alcohol, tobacco, morphine, lead, mercury, arsenic, thyroid extract); exophthalmic goitre; multiple sclerosis (volitional or intention tremor); acute chorea; Huntington's chorea; posthemiplegic tremor or athetosis or chorea; progressive lenticular degeneration or tetanoid chorea; internal capsule lesions; cerebellar tumor; progressive central muscular atrophy; dementia paralytica (tremor of tongue and lips); paramyoclonus multiplex; poliomyelitis or spinal paraplegia; Friedreich's ataxia; exhausting diseases; writer's cramp.

Trichinosis.—Gr. τρίχινος of hair. Trichinosis (trichiniasis or trichinelliasis) is caused by eating raw or rare pork containing the encapsulated trichina or trichinella spiralis. The hog contracts the disease by eating infected pork or rats. When the infected meat is taken into the stomach, the capsules are digested and the trichinæ set free. They pass into the duodenum and jejunum, and reach maturity before the end of the second day. The mature parasite is a minute, thread-like, round worm. The adult females are immediately impregnated by the males, which soon thereafter die, and the females bore into the intestinal lymph spaces where they deposit their young, perhaps a thousand or more per female. The embryo worms reach the striated muscles about the tenth day after infection, and here they penetrate into the muscle fibres where they become encysted. In this state

they may remain alive for very many years. When taken into the duodenum of another animal, they develop into the adult worms.

The severity and duration of the symptoms vary with the number of trichinæ ingested and the number of successive infections. The disease may last from several days to several months.

In a typical severe single infection the following symptoms appear.—One or two days after eating the infected meat, abdominal distress, nausea and vomiting occur, usually followed by diarrhœa, and general torpor and weakness. Between the seventh and tenth to fourteenth day, the embryos enter the muscles, with resulting muscle pains of more or less severity, ushered in by a temporary œdema of the eyelids and face, lasting from two to five days. Fever, a marked eosinophilia, and emaciation occur. The death rate is highest during this stage. About the twenty-fourth day a second œdema appears, involving particularly the head. Then convalescence sets in, and is sometimes very slow, extending over months or even years. The disease resembles typhoid fever. Rose spots may even appear.

The diagnosis rests upon the discovery of the encysted spiral trichina (the common sarcosporidium is not spiral) in the meat eaten, the minute, silvery, hair-like worms in the stools, and the eosinophilia. The stools should be diluted and shaken with warm water, and the worms allowed to settle to the bottom. The bottom portion of the fluid is then examined in a very thin layer in a shallow black dish, under a low-power lens, the dish being tipped slowly from one side to another. After the third week, a piece of the deltoid muscle may be teased in water and examined on a glass slide under a cover-glass.

Prognosis.—This is best in children and in cases of early severe diarrhœa. It is good if the patient survives the seventh week.

Treatment.—If seen early, evacuate the bowels thoroughly by means of calomel, followed in four hours by castor oil or Epsom salts (see Part 11), repeated, together with enemas if necessary. Santonin (see Ascariasis), thymol (see Ankylostomiasis), and the anthelmintics used for tapeworm (*q.v.*) may be administered. Hemmeter recommends benzine:

℞ Benzini..... ʒii ℈ii–ʒiii ♏xii
(♏x–xii per dose)
Mucilaginis acaciæ,
Aquæ, aa q.s. ad..... ʒiv

M. Sig.—Two teaspoonfuls every two hours; together with a high rectal enema of 4–8 c.c. in one quart of water. (Hemmeter.)

When the embryos have once invaded the muscles, the treatment can only be symptomatic. For the muscle pains, employ hot baths and hot camphorated oil.

Thorough cooking of pork and sausages is preventive.

Trichuriasis or Whipworm Infection.—Intestinal infestation with the trichuris

Fig. 87.—Whipworm. 1, egg; 2, female; 3, male.

trichiura, or whipworm (Fig. 87), may produce no symptoms, or it may possibly cause diarrhœa, enteritis, appendicitis, anæmia, neurasthenia, hysteria, convulsions, etc.

Treatment.—The various anthelmintics (chenopodium, male fern, santonin, thymol, chloroform) are not, as a rule, entirely effi-

cacious when administered in the usual way, possibly because they do not reach the cecal pouch, but success is reported by Wade in the use of thymol, gr. ii, t. i. d., for two weeks. The enemata used in oxyuriasis may be tried. The latex or sap of the fig tree is used in tropical America,—dose, 10 to 40 gm., according to the age of the patient, dissolved in sweetened water or milk, and taken three times a day, preceded and followed (on the fourth day) by a purge It is well recommended.

Trifacial or Trigeminal Nerve.—L. *tres*, three; *facia'lis*, facial; *gem'inus*, twin. Paralysis of this nerve results in anæsthesia on the affected side of the face and head, including the conjunctiva, cornea, and naso-buccal mucosa, and paralysis of the masseter and temporal muscles. The paralysis may be preceded by tingling and pain. Herpes zoster may occur.

Etiology.—Hemorrhage, sclerosis, or other disease of the pons, basal fracture, basal meningitis; bone caries; tumors; aneurysm; primary neuritis; syphilis; tabes; progressive bulbar palsy; removal of the semilunar ganglion.

Tonic irritation of this nerve results in trismus or lockjaw, which occurs in tetanus, tetany, hysteria, exposure to cold, irritative lesions of the pons, reflex irritation from the teeth, mouth, throat, and caries of the jaw.

Treatment.—This depends upon the cause. In sensory paralysis the anæsthetic eye should be guarded against injury, in order to avoid an ulcerative inflammation.

Trigeminal Neuralgia.—See Neuralgia.

Trismus; Lockjaw.—Gr. *τρισμός* lockjaw.

Causes.—Tetanus; tetany; hysteria; exposure to cold; reflex irritation due to dental caries, stomatitis, quinsy, caries of the bone, etc.; irritation near the motor nucleus of the fifth nerve, as in meningitis. See Trifacial Nerve.

Trochlear Nerve.—L. *troch'lea*, pulley See Motor Nerves of the Eyeball.

Tropical Abscess.—See Liver Abscess.

Dysentery.—See Dysentery, Amœbic.

Febrile Splenomegaly.—See Kala-Azar.

Sore.—See Part 5, Skin Diseases.

Trypanosomiasis.—See Sleeping Sickness.

Tuberculosis, Kidney.—L. *tuber'culum*, nodule. See Pyelonephritis.

Lymph-Gland.—See Lymphadenitis Tuberculosa.

Tuberculosis, Miliary, Acute.—L. *tuber'culum*, nodule; *mil'ium*, millet-seed. A fatal tuberculous septicæmia with the formation of miliary tubercles throughout the body, sometimes predominating in the cerebro-spinal meninges (tuberculous meningitis), sometimes in the lungs (pulmonary form), and sometimes uniformly distributed (general or typhoid form). The latter form closely resembles typhoid fever.

The Treatment is symptomatic. See Meningitis, Acute Cerebro-Spinal, for the consideration of tuberculous meningitis.

Tuberculosis, Pulmonary; Phthisis; Consumption.—L. *tuber'culum*, nodule; *pul'mo*, lung; Gr. *φθίσις* consumption; L. *consump'tio*, wasting. Pulmonary tuberculosis is either acute (tuberculous pneumonia; pneumonic phthisis; galloping consumption; sometimes acute miliary tuberculosis) or, more commonly, chronic. The latter is either ulcerative, or more rarely fibroid.

The clinical evidences of pulmonary tuberculosis are as follows: fever, especially an evening rise, sometimes chills, increased pulse rate, loss of weight and strength, anæmia, often dyspepsia, anorexia, and neurasthenia, night-sweats, cough and expectoration, often hoarseness, sometimes dyspnœa, usually thoracic pain, perhaps pleurisy, often hæmoptysis, local physical signs (impaired resonance, jerky inspiration, slightly prolonged expiration, localized râles, etc.), the tuberculin reaction, and the presence of tubercle bacilli in the sputum.

One should differentiate particularly between acute tuberculosis, chronic active tuberculosis, chronic inactive tuberculosis, and acute respiratory colds.

By inspection, note the conformation of the chest, and look for depressions, and for lagging of one side or one apex (due to connective tissue replacement of lung tissue, a result of tuberculosis). In testing for vocal fremitus, keep the palpating hands relaxed. In performing percussion, begin in the axilla (normal area). If one begins over a dull apex, the dull note will be carried downward. Percuss upward in front. In percussing the back, have the patient bend naturally forward, with arms easily folded and muscles relaxed. Begin in the infra-scapular area (true vesticular area). A dull note near the lower angle of the scapula is muscle dulness. An enlarged stomach and colon on the left side and liver dulness on the right may, by contrast, cause mistakes. Muscle dulness changes with the posture of the patient. In front, the liver, muscles, and stomach modify the percussion note. The latter gives a hyper-resonant tone from the 6th. costal cartilage down to the 9th. rib in the mid-axillary line. A distended stomach will push heart dulness upward. Percuss out Kronig's isthmus, standing behind the pa-

tient, to see if it is narrowed. The isthmus is the narrowest portion of the lung, lying above the clavicle in front and the spine of the scapula behind. It is normally about two inches wide, *i.e.*, from neck to acromion. It is normally wider and higher on the left side, and wider in a long, thin chest than a short thick chest. Narrowing means contraction of the lung and chronic tuberculosis; in acute tuberculosis there is congestion instead of contraction.

In auscultating the chest, remember that râles which disappear on deep breathing several times are marginal and normal, and that fine crepitations are normally heard over the edge of the sternum, due to the stethoscope touching the edge of the bone, also clicks are normally heard in the vicinity of the sternocostal articulations during strong respiration and after a cough. Prolonged expiration, broncho-vesicular breathing, and increased spoken and whispered voice-sounds mean the presence of connective tissue (not congested tissue), and, therefore, chronic tuberculosis. The presence of persistent fine râles mean an active lesion. Practise auscultation following exhalation and cough, in order to collapse the bronchioles and air cells, so that râles may be detected on inspiration. Râles occurring with an acute respiratory cold are usually heard along the inner border of the scapulæ on both sides, and have no reference to inspiration or expiration. They usually disappear in eight to twelve days. In acute bronchitis râles are scattered over the whole chest.

Hilus tuberculosis is brought out only by D'Espine's sign: If one listens over each dorsal spine from the first downward, and has the patient whisper rather loudly, the sound will begin to markedly diminish in normal individuals at the 6th. dorsal spine (5th. spine in a thick, short chest; 7th. spine in a long, thin chest). If the voice is heard with greater distinctness below this point, listen in a triangular area on each side. If the voice is carried out into this area, it means hilus disease, *i.e.*, tuberculosis, aneurysm of the descending aorta, enlarged gland or new-growth in the mediastinum. Make a radiogram (see Röntgenology).

Peribronchial tuberculosis is indicated by persistent, indistinct râles over the outer edge of the sternum at the second and third interspaces. Make a radiogram. The process is apt to extend to the superficies of the lungs and into the opposite apex.

Collections of blood, as in the congestions of lobar and broncho-pneumonia and acute tuberculosis, cause shadows of fuzzy outline on the x-ray plate; fibroses and calcifications produce shadows in the form of sharply outlined spots, streaks and lines.

The tuberculin test is performed as follows:

(a) **Koch's Method.**—A two-hour temperature chart should be kept for two days preceding and following the injection. Inject deeply beneath the skin in the interscapular or gluteal region, to a robust adult, ½ to 1 mg., to a child or a weak patient (never to one with fever), $\frac{1}{10}$ to $\frac{3}{10}$ mg. of Koch's old tuberculin (1 c.c. = 1 gm. of tuberculin); and take the temperature every two hours. A rise of 0.5° C., or 0.9° F. within two to thirty-six hours is a positive result. If no rise in temperature follows the first injection, a second and a third injection may be given, each three days apart, the dose being doubled each time, but never exceeding 10 mg. A pronounced positive reaction is marked by malaise, headache, insomnia, aching pains, nausea, cough, rise in temperature, rapid heart rate, inflammatory signs at the site of inoculation, and increased inflammatory signs at the focus of infection.

(b) **Moro's Method.**—Rub a little salve, consisting of equal parts of old tuberculin and lanolin into the skin over the thorax or abdomen. The reaction is positive if small pale nodules appear after twenty-four to forty-eight hours.

(c) **Von Pirquet's Method.**—Cleanse the inner side of the forearm with alcohol and ether, and allow to dry. Place two drops of old tuberculin on the skin at a distance of 6 to 8 cm. from each other. Then puncture with a large needle or gently scarify the skin beneath the drops, and also midway between the drops, the latter as a control. After ten to fifteen minutes, or after drying has occurred, replace the clothing. A positive reaction is manifested by the appearance within twenty-four to forty-eight hours of a reddish papule.

"A positive tuberculin reaction merely indicates that the patient has at some time been infected with tuberculosis, and not necessarily that he is at present tuberculous; but the occurrence of a focal reaction is good presumptive evidence of an active lesion." "In many advanced or acute cases of tuberculosis, no tuberculin reaction is obtained, so that the result of a tuberculin test is never absolute." "After infancy, an increasing proportion of those who react are found to be free from clinical tuberculosis." (from New and Non-Official Remedies.) The tuberculin test is dangerous.

The Sputum is Examined as follows: A thin smear (preferably of the most purulent portion of the sputum or of the fine cheesy

TUBERCULOSIS IN BIRDS TA.

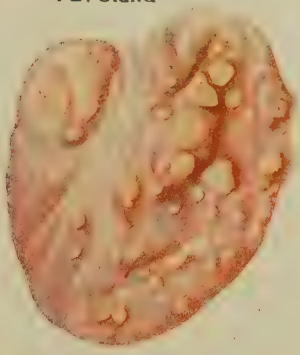
TA. Liver Left side

TA. Small intestines

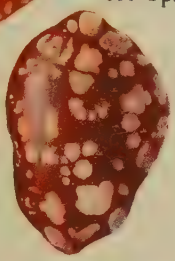
BOVINE TUBERCULOSIS TB.

TB. Lung.

TB. Gland



TA. Spleen



TB. Costal pleura (Bovine pulmonary tuberculosis)

TB. Mammary Gland

Healthy portion

Diseased part

Diseased meats

particles) is fixed upon a clean, unused glass slide, by passing it (after drying in the air) rapidly thrice through a Bunsen flame, with the sputum side down. It is then subjected for five to ten minutes to steaming (not boiling) carbol-fuchsin (1 part saturated alcoholic—95 per cent.—solution of fuchsin and 9 parts 5 per cent. carbolic acid solution), washed; decolorized one-half minute with spirits of nitrous ether, or with a 10 per cent. solution of sulphuric acid in 95 per cent. alcohol until only the faintest pink color is seen; washed in water; counter-stained with Loeffler's methylene blue (saturated alcoholic solution of methylene blue, 30 c.c., with aqueous solution of KOH, 1 : 10,000—100 c.c.) for about thirty seconds; washed; dried with filter paper; mounted in Canada balsam; and examined with an oil immersion lens. A number of slides should be examined, and the sputum obtained at different times.

Perhaps the surest method of securing tubercle bacilli is by Loeffler's modification of the antiformin process of Uhlenhuth. To 5 or more c.c. of the sputum add an equal quantity of a 50 per cent. solution of antiformin (10 per cent. solution of sodium hypochlorite containing 5 to 10 per cent. sodium hydrate), and boil for no longer than fifteen minutes. To each 10 c.c. of the resulting solution add 1.5 c.c. of a mixture of 1 part chloroform and 9 parts alcohol; shake thoroughly so as to produce a fine emulsion; then centrifuge for fifteen minutes. Pour off the supernatant fluid above the film which lies just above the chloroform, and which holds the tubercle bacilli, place the film upon a glass slide, and remove excess of fluid with filter paper. Add a drop of egg albumen (preserved with 0.5 per cent. carbolic acid) as a fixative, and make a thin spread by means of a second slide. Allow to dry, and stain as described above. (Abstracted from *Webster's Diagnostic Methods.*)

Prognosis.—This is uncertain, but experience justifies the cultivation of a hopeful attitude on the part of both patient and physician in practically all cases. A cure, however, is not a matter of months but of years.

Prophylaxis.—This embraces the abolition of promiscuous spitting and of dry sweeping, the destruction of tuberculous sputum by burning or boiling, the use by consumptives of paper handkerchiefs to cover the nose and mouth while coughing, the inspection of dairies and abattoirs and the destruction of diseased animals, milk pasteurization (holding at a temperature of about 140° F. for fifteen to thirty minutes), and correct personal hygiene, viz.—fresh, pure air day and night, adequate rest and exercise, a daily morning warm bath in a warm room, followed by a cold spinal douche, regular hours of eating and sleeping, rest before and after meals, a plain but abundant diet, adequate clothing, including flannel underwear, cleanliness of the mouth, teeth, and food, and the correction of abnormalities, *e.g.*, adenoids, enlarged tonsils, dental caries, etc.

Each individual should be allowed at least 1000 cubic feet of air space. The most healthful rooms are those facing south in winter and north in summer.

In thin layers of sputum, the tubercle bacillus is killed by direct sunlight in about six hours and by diffused sunlight in several days.

Treatment.—Correct hygiene and an abundance of good food are the fundamental requisites. The patient should observe regular hours of eating and sleeping. He should be out of doors as much as possible, and should engage in light exercise, particularly walking, except when fever (99° F.), rapid pulse, or hæmoptysis is present, when he should be at rest in bed. Exercise should be restricted if it causes elevation of temperature. Fresh air day and night is of paramount importance, but wind and draughts should be guarded against. The underwear should be of flannel, best porous, not too heavy. No chest protectors should be worn, nor tight corsets that restrict breathing. The clothing and the feet should be kept dry. A good place for the bed and reclining chair is the veranda, one facing south in winter, and one north in summer. If a tent is used, the wooden floor should be raised about three feet from the ground, and the sides should be boarded up to about three feet, with a space of three inches between the latter and the outside canvas walls, which, if desired, may be lifted up to the eaves on all sides. There should be a veranda in front, well-covered with a fly, and within the tent a small stove. A woolen cap may be worn over the head and ears at night when it is cold.

Every morning before breakfast, but after swallowing a cup of hot milk or bouillon, a cold sponge should be taken, standing in warm water in a warm room. The skin should then be rubbed vigorously with a coarse towel. Once or twice a week a cleansing hot bath, followed by a cold douche may be taken. A bath should not be taken soon after a meal. The patient should rest for an hour before and after each meal. The teeth should be cleansed with castile soap, warm water, and a brush

before each meal, and the mouth and throat rinsed; carious teeth should be treated. The sputum should be burned (paper spit-cups containing a solution of carbolic acid or bichloride may be used); and the patient should be instructed to hold a handkerchief before the nose and mouth in coughing. The handkerchief should be boiled each day. The hands should be kept clean. No dry dusting or sweeping should be allowed. In short, the strictest personal cleanliness should be observed, not only for the protection of others, but also for the protection of the patient himself against auto-infection.

In the matter of diet, the patient should eat as much as he can digest and assimilate, but no more. Three good meals a day, at five-hour intervals, is ordinarily better, I believe, than three meals and three lunches; but the latter may be preferable in some cases.

Our most nutritious foods are bread, milk, eggs, and meat. On a general diet, about three or four pints of milk and six eggs may be taken daily. The milk should be drunk slowly, and to render it more digestible one may add to each tumblerful a pinch of salt or sodium bicarbonate or sodium citrate, or a tablespoonful or more of lime-water or Vichy or Apollinaris, or a little cognac, coffee, or tea, or it may be peptonized (see Part 11). Two-thirds milk, one-third cream, one teaspoonful of brandy, and one tablespoonful of lime-water forms a nutritious drink. Koumyss, Kefir, matzoon (see Part 11), buttermilk, Horlick's malted milk, and Mellin's food may be of value.

If the yolk of the egg causes gastric distress or diarrhoea, use only the white.

Of the meats, beef and mutton are the best. Chopped raw, perfectly fresh beef seasoned with salt, one-half pound two or three times a day, is a valuable food; as is also meat juice, made by expressing the muscle plasma from meat slightly heated in a dry saucepan.

Fats are of importance, *e.g.*, cream, butter, sardines, salmon, bacon, olive oil, and cod-liver oil in teaspoonful doses (contra-indicated, however, in warm weather, high fever, and gastric irritation):

℞ Olei morrhuæ..... ℥xvi (℥ii per dose)
Acaciæ..... ℥iv ℥i
Calcii hypophosphitis..... ℥iiss
Potassii hypophosphitis... ℥i gr. xv
Syrupi simplicis..... ℥iii ℥iiss
Olei gaultheriæ..... ℥i
Aquæ destillatæ, q.s. ad... ℥xxxii
M. fiat emulsum.
Sig.—Tablespoonful t.i.d.p.c. (U. S. P.)

℞ Olei morrhuæ..... ℥xvi (℥ii per dose)
Mucilaginis dextrini..... ℥iv ℥i
Extracti malti..... ℥xiiss
M. fiat emulsum.
Sig.—Tablespoonful t.i.d.p.c. (Nat. Form.)

℞ Vitelli ovi.....No. v
Olei amygdalæ amaræ.... ♏x
Mix thoroughly in a mortar and then add, drop by drop at first, constantly stirring.
Olei morrhuæ..... Oi
Glycerini..... ℥ii
Acidi phosphorici (Squibb's concentrated)..... ℥i
Spiritus frumenti,
Aquæ, aa..... Oss
M. Sig.—Tablespoonful t.i.d.p.c. (Otis.)

Well-cooked cereals, vegetables, fruits, and salads, dressings, sauces, condiments, pickles, chow-chow, catsup, and spices are important accessory foods and appetizers. One or two quarts of water should be taken daily, between and not before meals.

The following daily routine may serve as a guide for the average afebrile case: On rising in the morning, a cup of hot milk or bouillon, then a cool sponge bath in a warm room, standing in warm water.

8 A. M.—Breakfast: A well-cooked cereal with sugar and cream; milk or weak tea or coffee; bacon; an egg boiled three minutes, or instead, a chop, steak, or other meat; plenty of bread and butter; fruit. Rest about half an hour after breakfast.

9 A. M.—Exercise; a walk.

12 M.—Rest, reclining.

1 P. M.—Dinner: soup, bouillon or broth, and alcohol as an appetizer; rare roast beef, mutton, lamb, fowl, fish, or oysters; vegetables, such as potatoes, turnips, carrots, parsnips, spinach, asparagus, corn, peas, beans, tomatoes, etc.; salads with olive oil dressing or mayonnaise; puddings, simple cake, fruit. Rest about an hour after dinner.

3 to 4 or 5 P. M.—Exercise.

5 to 6 P. M.—Rest, recumbent.

6 P. M.—Supper: alcohol as an appetizer; meat, fowl or fish; eggs; cottage cheese and cream; vegetables, baked beans; bread and butter; milk or tea or cocoa; jam, marmalade, or cooked fruit.

9 P. M.—Warm milk, malted milk, Mellin's food, or bouillon.

9:30 to 10 P. M.—Retire.

A good, tasty cook is essential.

In some cases, where the patient is much underweight, it may be deemed advisable to give a glass of milk or one or two raw eggs at 10 to 10:30 A. M., and 3:30 P. M. It is no doubt more satisfactory to weigh the foods, and prescribe a diet which pro-

vides a little more than the full number of calories required for one of the patient's age, height, and sex (see under Food Values).

The presence of moderate chronic fever does not contraindicate a full diet; but if the fever is high and acute, only liquid nourishment may be given, *e.g.*, diluted milk, buttermilk, or koumyss, raw eggs, meat juice, alcohol, etc., every two or three hours. Raw meat juice is prepared by stirring four parts of finely chopped steak with one part of cold water, allowing it to stand for half an hour in the cold and then expressing the juice through a cloth or meat press.

As appetizers and tonics, one may prescribe the bitter tonics about fifteen minutes before meals. (See Anorexia):

℞ Tincturæ nucis vomicæ.... ℥iv (♏x per dose)
Tincturæ cinchonæ compositæ..... ℥vss
M. Sig.—Two teaspoonfuls, t.i.d.a.c.

Dilute hydrochloric acid, gtt. xx, in a tumblerful of water, may be sipped after meals.

An occasional antipyretic may lessen anorexia: pyramidon, gr. ii, in capsule, at 9, 10, and 11 A. M.; or lactophenine, gr. iii to v, at 9 or 10 A. M., dinner being taken at 1 P. M.

Creosote (pure Beechwood) is of some value when well borne: gt. i well diluted in hot water, t.i.d.p.c., gradually increased to gtt. x, t.i.d. It may also be inhaled from steaming water (gtt. x to xx ad Oi) for fifteen or thirty minutes twice daily. Stop the creosote if it causes anorexia, nausea, vomiting, or albuminuria.

℞ Creosoti (Beechwood).. ℥i (♏i per teaspoonful)
Tincturæ gentianæ compositæ..... ℥ii
Alcoholis..... ℥ii ℥ss
Vini xerici, q.s. ad..... ℥viii
M. Sig.—One teaspoonful to three tablespoonfuls in a glass of milk or water after meals. (Bouchardat and Gimbert.)

℞ Creosotalis (creosoti carbonatis).... ℥iv
Sig.—Minims v–xx, gradually increased to one teaspoonful 3 or 4 times a day in milk during meals. (Ortner.) (highly recommended.)

℞ Creosoti (Beechwood)..... ♏xxx
Tincturæ gentianæ, q.s. ad..... ℥i
M. Sig.—8 drops in one teaspoonful of red wine, t.i.d.p.c., increased by one drop every three days up to 20 drops t.i.d., the latter dose to be continued for about three months. "Almost specific in phthisical dyspepsia." (Cohnheim.)

Calcium and phosphorus are reputed to be of some value, *e.g.*, calcium glycerophosphate, gr. v, in tablet, powder, or capsule, t.i.d.p.c. Garlic (see Part 11) is strongly recommended by Minchin as antiseptic and antitubercular.

For anæmia, prescribe Fowler's solution of arsenic and Blaud's mass, etc. (See Anæmia.)

The temperature should be taken twice or thrice daily, unless it has been normal for some time, and the patient should be weighed once a week.

The tuberculin treatment is, I believe, of doubtful value. It may be administered with safety only to those whose condition is fairly good, and who are afebrile or nearly so, and who have a localized lesion; or, in other words, to those who get well with good hygiene and good food. Following hæmoptysis, it should not be given until the temperature has been normal two weeks.

One should begin with a very small dose, $\frac{1}{10,000}$ to $\frac{5}{10,000}$ mg. of Koch's old tuberculin (O.T.), or, if there is fever, $\frac{1}{100,000}$ to $\frac{2}{100,000}$ mg., and increase the dose very gradually every three or four days, with the object of attaining as high a grade of tuberculin tolerance as possible, while strictly avoiding a reaction, *e.g.*, rise of temperature, increased pulse rate, and constitutional symptoms.

"The dose at first may be doubled each time, unless any evidence of reaction is observed. After $\frac{1}{100}$ mg. is reached, it is advisable to go more slowly, thus, $\frac{2}{100}$, $\frac{3}{100}$, $\frac{4}{100}$ mg., etc." "If a reaction occurs, no further injections should be given for ten days, or until all symptoms have disappeared, and then one should begin with much smaller doses."

"After a dose of $\frac{1}{10}$ mg. is reached, the injection is given only once a week. The dose is then still further increased until tuberculin immunity is finally attained, which must necessarily vary with each individual and may be as high as 1000 milligrams or 1 gram, or more."

"The apparatus needed to make the dilutions are a number of small, wide-mouthed, glass-stoppered bottles and three glass pipettes, one holding $\frac{1}{10}$ c.c., graduated into hundredths of a cubic centimetre; the second holding 1 c.c., graduated into tenths of a cubic centimetre; and the third holding 10 c.c., graduated into tenths of a cubic centimetre. These should be boiled before use."

"The diluting solution generally used consists of one-fourth of 1 per cent. carbolic acid in physiologic salt solution (0.8 per cent.), which should be filtered and boiled. There should be no sediment in the solution. To

make the solution, one-tenth of the original tuberculin is removed by the first pipette, and to it is added 9.9 c.c. of the diluting fluid, which gives a 100-fold dilution, of which $\frac{1}{10}$ c.c. equals 1 mg. of tuberculin. From this number 1 dilution, $\frac{1}{10}$ c.c. is removed and 9.9 c.c. of the diluting fluid added, which gives a 1000-fold dilution, or $\frac{1}{100}$ mg. in $\frac{1}{10}$ c.c. of the dilution. Next, from this number 2 dilution, $\frac{1}{10}$ c.c. is taken, to which 9.9. cc. of the diluting fluid is added, which gives a 10,000-fold dilution, or $\frac{1}{10,000}$ mg. of tuberculin in $\frac{1}{10}$ c.c. The dilutions can be thus continued until in $\frac{1}{10}$ c.c. the proper dose is obtained." "The various solutions must be kept in a refrigerator and fresh ones prepared every two weeks." Many pharmaceutical firms furnish serial dilutions.

The injections are made subcutaneously with a very fine needle and a glass syringe of the capacity of $\frac{1}{2}$ or 1 c.c., graduated into hundredths of a cubic centimetre (a Randall-Faichney or a Burroughs-Wellcome syringe). The syringe and needle should be boiled before using, and the skin cleansed with alcohol.

The patient should be given a tuberculin record chart, whereby the physician may properly graduate the dosage of tuberculin so as to avoid a reaction.

The strength of the various tuberculins varies, not only in those prepared by different methods, but also in different batches prepared in exactly the same way, so that, when a correct dosage for an individual has been found, a change to a different laboratory number of the same preparation should be accompanied by a reduction in the dose to one-half in order to avoid a severe reaction. (New and Non-Official Remedies.)

The beginning dose of the bouillon filtrate of Denys (B. F., consisting of soluble toxins) and of the tuberculin rest of Koch (T.R., consisting of dead bacilli) is the same as that of Koch's old tuberculin (O.T., consisting of soluble toxins), *i.e.*, $\frac{1}{10,000}$ mg. The beginning dose of the bacillen emulsion of Koch (B.E., consisting of dead bacilli) is $\frac{1}{100,000}$ mg.; " when $\frac{1}{100}$ mg. is reached, the interval should be a week."—Abstracted from E. O. Otis in Musser and Kelly's *Practical Treatment.*

The initial dose of Koch's new tuberculin, either the human (T.R.) or the bovine (P.T.R.) variety, is about $\frac{1}{50,000}$ mg. (C. E. Lakin.)

Trudeau says that a proper series of injections, avoiding any reaction, requires from six months to a year or longer; and he advises a second course of treatment should any symptoms reappear after an apparent cure.

Splinting of the lung by means of an artificially induced pneumothorax was advocated by the late John B. Murphy (see Pneumothorax, Artificial).

Treatment of Symptoms.—FEVER.—Fever may be excited by exercise, emotion, constipation, simply coryza, sore throat, etc. When the morning or minimum temperature is 99° F., the patient should be at rest in bed. For a temperature of 103° F., employ hot sponging or cool sponging under covers. Pyramidon, lactophenin, or phenacetin, gr. ii of any one of these, may be given three hours before the expected rise of temperature, and repeated every hour until three doses have been given. Ortner prefers pyramidon camphorate, gr. v to xv, dissolved in one ounce of water, repeated, if necessary, even up to 45 gr. a day. He says these doses are without the slightest ill effects. Yeo recommends phenacetin, gr. ii to iii, with hydrobromide of quinine, gr. ii to iv, t.i.d.; or the quinine may best be given in a single dose, gr. v to viiss, about an hour before the maximum temperature. Guaiacol (Part 11) may be used externally with care. But rest and fresh air are the best febrifuges and drugs should be avoided. Acute fever demands only liquid nourishment, but chronic fever calls for full diet.

NIGHT SWEATS.—A flannel nightgown should be worn, and not too much bedcovering. At bedtime, the skin may be sponged with vinegar, or alcohol and water, or alum solution, 1 : 30, or alcohol and formalin (the commercial 40 per cent.), equal parts, painted on; or one of the following dusting powders may be used, viz.—tannoform, 1 part, and talcum or compound stearate of zinc, 2 parts; or undiluted tannoform; or salicylic acid, 3 parts, wheat starch, 10 parts, talcum, 87 parts; or zinc peroxide, ℥i, with talcum, ℥iss. The formalin is said to be very efficacious, its effect lasting usually several nights. Ortner prefers the tannoform.

Milk may be given at bedtime, to which may be added two or three teaspoonfuls of whiskey or brandy; or the patient may be aroused and given food two hours before the expected sweat. Constipation should be corrected.

Says Osler: "Atropine in doses of gr. $\frac{1}{120}$ to $\frac{1}{60}$ (or gr. $\frac{1}{120}$ every hour for two or three doses) and the aromatic sulphuric acid in large doses (℥ss, well diluted, at

bedtime) are the best remedies"; and "when there are cough and nocturnal restlessness, an eighth of a grain of morphine may be given with the atropine."

Other antihydrotics, to be given at bedtime, are as follows:

Camphoric acid, gr. xii (L. Brown); gr. xv to xxx (Croftan; Otis); gr. xv to lx. (Yeo.)

Muscarin, 1 per cent. solution, ♏ v, hypodermically.

Picrotoxin, gr. 1/60.

Agaricin, gr. 1/6 to 1/8; or agaricinate of soda or lithia, gr. ii to iv.

Tincture of nux vomica, ♏xxx, in water.

Zinc oxide, gr. iii to v.

Guaiacamphol, gr. iii to vii to xv.

Bromural, gr. v.

Sodium or potassium tellurate, gr. 1/4 to 1 1/2, t.i.d.

Fl. ext. hydrastis, gtt. xxx, at bedtime, well diluted.

Fl. ext. ergot, ʒss + t.i.d., in water.

Tincture of digitalis, ♏x, t.i.d., well diluted.

Cough.—Useful alleviative remedies are as follows: (1) A cup of hot milk or water containing one of the following, viz.—sod. bicarb., gr. xv; or sod. bicarb., gr. x, sod. chloride, gr. iii, and spt. chloroform, ♏xx; or sod. bicarb. and sod. chloride, aa. gr. v, and aromatic spirits of ammonia, gtt. xx; or ammon. chloride, gr. v to x; or ammon. carbonate, gr. ii; or a teaspoonful of brandy. These hot draughts are particularly useful for the morning cough. Expectoration is facilitated by hanging the head and trunk over the edge of the bed, and by raising the foot of the bed. Tapping upon the chest with the blade of a knife is an aid to expectoration.

(2) Inhalations of steam medicated with creosote, gtt. x to xx ad Oi of steaming water; or turpentine, ʒss ad Oi; or tincture of benzoin, ʒi ad Oi; or oil of pine, ʒss ad Oi; or oil of eucalyptus, gtt. xxx ad Oi; etc. (See Bronchitis.)

(3) Continuous wearing of an oronasal respirator containing creosote or carbolic acid and spt. chloroform, aa; or menthol, ʒi, creosote, ʒi, spt. vini rect., et spt. chloroformi, aa ʒss; or acetone.

(4) For the nocturnal cough: warming of the bed before entering; and a cup of hot milk, with or without whiskey, etc., thirty minutes before bedtime; or codeine, gr. 1/4 to 1/2; or heroin, gr. 1/12; or dionin, gr. 1/4; or, ℞ Morphinæ, gr. 1/8 to 1/6. Ac. hydrocyanici dil., ♏ii to iii. Syrupi pruni Virgin., ʒi (Osler). But opiates should be used only as a last resort.

(5) For an irritative cough:

℞ Codeinæ sulphatis..... gr. iv
Ammonii chloridi..... ʒiss
Syrupi acidi citrici..... ʒi
Aquæ, q.s. ad..... ʒiv

M. Sig.—A teaspoonful, well diluted in plain water or Vichy, every two, three, or four hours, as needed. (*Handbook of Therapy of the A. M. A.*)

(6) For profuse bronchorrhœa: terpin hydrate, gr. v, in tablet, powder, or capsule with plenty of water, four or five times a day.

(7) Mustard poultice (Part 11); or a hot linseed poultice.

(8) For throat irritation: steam inhalations; warm alkaline gargles.

(9) For cough due to larnygeal ulceration, treat the local condition (see Larnygitis, Tuberculous, in Part 9, Throat Diseases).

(10) For an emetic cough, prescribe hot water thirty minutes before meals to encourage the expectoration of accumulated secretions. Allow no hot drinks during the meal. Enjoin rest after meals.

(11) For pleuritic cough, strap the chest from spine to sternum.

(12) For cough due to fever, give pyramidon, gr. ii to vi, at bedtime.

Pain.—For severe pleuritic pains, paint the side with tincture of iodine; or immobilize it by means of a broad band of zinc oxide adhesive plaster applied during forced expiration from the spine to the sternum. Other useful remedies are the mustard poultice, hot water bag, ice-bag, cold compresses, the thermocautery lightly applied, dry cupping (*q.v.*), and inunctions of the following ointment:

℞ Extracti belladonnæ..... gr. xlviii
Extracti opii..... ʒiss
Mentholis..... gr. xxiv
Alcoholis..... ʒss
Adipis lanæ hydrosi,
Petrolati mollis, aa..... ʒss

Misce et fiat unguentum.

Sig.—Rub into the skin over the seat of pain.

Painful Dysphagia.—Insufflate the larynx just before eating, with orthoform powder; or spray it with cocaine, 0.5 per cent.; or paint it with a 2 to 8 per cent. cocaine solution. The swallowing of ice-pills and the external application of cold may be serviceable. The patient may swallow with greater comfort by lying upon the stomach and sucking liquid through a straw. The superior laryngeal nerve may be injected with alcohol (see also Laryngitis, Tuberculous, in Part 9, Throat Diseases).

Diarrhœa.—First evacuate the bowels by means of castor-oil, then prescribe bismuth

in large doses, with Dover's powder, gr. v, a day; or lead and opium pill (for all drugs see Part 11); or silver nitrate, gr. ¼ to ½, with opium, gr. ss, t.i.d.; or a cleansing enema followed by starch solution, ℥ii, with or without laudanum, ♏x. Restrict the diet to boiled milk, milk puddings; custards, arrowroot, meat juice, egg albumen; restrict fluids; avoid fruits, salads, sweets, cold drinks, and most vegetables; have the patient wear a flannel abdominal binder constantly. Creosote may be of service.

Dyspepsia.—Gastric indigestion should be treated by a restricted liquid or soft diet and gastric lavage accomplished either by means of warm soda-water taken one hour before meals, or by means of the stomach-tube, as described under Gastritis, Chronic. Cohnheim recommends creosote (see his prescription, preceding).

Treat flatulence, vomiting, anorexia, etc., as described under their respective headings in other parts of this work.

Hæmoptysis.—See Hæmoptysis.

Tuberculosis, Renal.—See Pyelonephritis.

Tumor of the Brain.—See Brain Tumor.

Tumors of the Breast.—See Breast Enlargements.

Tumors, Malignant.—See Malignant Neoplasms.

Twelfth Nerve.—See Hypoglossal Nerve.

Tympanites; Flatulency; Meteorism.—Gr. *τύμπανον* drum; L. *flatulen'tia*, distention with gas; Gr. *μετεωρίζειν* to raise up. Gaseous distention of the gastro-intestinal tract.

Etiology.—Fermentation secondary to gastric or intestinal catarrh; excessive intestinal fermentation following the ingestion of certain easily fermentable foods, *e.g.*, beans, peas, cabbage, potatoes, turnips, fresh fruit, fresh bread, black bread, cakes, sweets, fatty foods, milk, Kefir, beer; aërated beverages; swallowing of air in hysteria, producing sometimes phantom tumors; general intestinal atony; chronic passive congestion due to heart, lung, kidney, or liver disease; toxic paralysis of the bowel, occurring in acute infectious diseases (typhoid fever, pneumonia, etc.); paralysis of the bowel the result of shock, caused by too much handling of the intestines; peritonitis; intestinal obstruction, partial or complete.

Treatment.—Attend to the cause. Administer laxatives, if not contraindicated (as in intestinal obstruction). Gentle abdominal massage is useful where not contraindicated (contraindicated in typhoid fever). A hot turpentine stupe applied to the abdomen is of service. It consists of flannel wrung out of steaming hot water containing a teaspoonfull of turpentine to the quart and covered with dry flannel. These should alternate with plain hot stupes. High enemata of turpentine in soapsuds (℥ss i to iv to a large enema), or of asafœtida (four tablespoonfuls of the emulsion to the enema) are valuable. The tube may be left in place and the patient turned frequently so as to evacuate the gas. In typhoid fever a large soft catheter should be used, and with great care. Employ the stomach tube for gastric distention.

Useful carminatives (see Part 11 for formulæ, etc.): Aquæ menthæ piperitæ; olei terebinthinæ, (especially useful in typhoid fever); olei cinnamomi; olei cajaputi; fluidextracti zingiberis; olei caryophylli; olei anisi; olei carui; olei thymi; olei sassafras; spiritus myristicæ; tr. cardamomi comp.; olei fœniculi; asafœtidæ; olei limonis; tr. aurantii; spt. ammoniæ arom.; aquæ chloroformi; misturæ sodæ et menthæ; etc.

℞ Sodii bicarbonatis..... ℥i (gr. viiss per dose)
Pulveris rhei..... ℥ss (gr. 3¾ per dose)
Spiritus menthæ piperitæ ℥ii (♏xv per dose)
Aquæ, q.s. ad..... ℥iv
M. Sig.—Tablespoonful, after shaking, t.i.d.p.c., in water.

Gas absorbents: Pulveris carbonis ligni; magnesii oxidi; bismuthi subnitratis vel subsalicylatis. Ortner considers these drugs of very little use.

Intestinal antiseptics: Beta-naphtholis; resorcinolis; creosoti; mentholis; thymol; salol. See also Intestinal Intoxication.

℞ Mentholis..... gr. xlv (gr. iss per pill)
Extracti belladonnæ foliorum..... gr. ivss (gr. ⅓₀ per pill)
M. ft. pil. no. 30.
Sig.—One pill, t.i.d. (carminative and relaxant of colonic spasm). (Cohnheim.)

Intestinal tonics: Physostigminæ vel eserinæ salicylatis, gr. 1/100 to 1/60 to 1/30, by mouth or hypodermically, every three or four hours (for intestinal atony or paresis); pituitrin, 0.5 to 1 c.c. hypodermically, every hour, for say from three to six doses (for intestinal paresis).

Typhoid Fever.—Gr. *τῦφος* stupor + *εἶδος* form. An acute infectious disease, a bacteræmia, caused by the bacillus typhosus, characterized by an incubation period of from eight to fourteen days or longer, followed insidiously by malaise, anorexia, headache, sometimes chills, diarrhœa or constipation, often epistaxis, abdominal distention and tenderness, sometimes abdominal pain, coated tongue, commonly bronchitis, a dicrotic pulse of increased rate, and a con-

tinued fever. The condition becomes progressively worse, the temperature gradually attains a maximum and remains there, swelling of the spleen and rose spots appear usually about the end of the first week of definite illness, the mind becomes dull and the general symptoms aggravated. In the third week one may look for a gradual decline of the symptoms, with morning remissions of the temperature; and in the fourth week the beginning of convalescence. But the disease may last anywhere from a few days to twelve weeks, and death may occur at any time from toxæmia, intestinal hemorrhage, or perforation, or a complication. Possible complications include pneumonia, pleurisy, cholecystitis, otitis media, pyelitis, osteomyelitis, periostitis, parotitis, arteritis, phlebitis and thrombosis, psychoses, boils, etc. Even after apparent recovery, recrudescences and relapses sometimes occur.

Typhoid fever is a protean disease. It may be very mild or very severe. Sometimes the onset is sudden with severe headache, or severe facial neuralgia, or delirium or stupor, or meningism (headache, photophobia, retraction of the head, muscular rigidity and twitching, convulsions), or pneumonia, or severe vomiting (see Paratyphoid Fever), or sharp abdominal pain, or acute nephritis. There is a serious ambulatory form.

When hemorrhage occurs, the temperature, blood pressure (*q.v.*), and hæmoglobin percentage (see Blood Examination) fall, and symptoms of collapse appear.

Endeavor to diagnose perforation before peritonitis sets in. Significant signs are: sudden abdominal pain and nausea and vomiting, sudden rise or fall of temperature, with perhaps sweating, sudden increase in the pulse or respiratory rate, and rise of blood-pressure, a leucocytosis following a leucopænia; and later, muscle spasm and rigidity, distention, diminished respiratory excursions, and lessening or disappearance of the area of hepatic dulness. With such symptoms, do an exploratory operation before it is too late (see below).

The following diseases may simulate typhoid fever: Acute miliary tuberculosis, tuberculous peritonitis, malarial fever, enteritis, paratyphoid fever, septico-pyæmia, influenza, the acute exanthemata, febricula, secondary syphilis, osteomyelitis, appendicitis, acute nephritis, meningitis, pneumonia, pleurisy, trichinosis, typhus fever, malignant disease, ptomaine poisoning, etc.

In uncomplicated typhoid fever there is no leucocytosis. The Widal reaction first appears, in most cases, in the second week of the disease, or by the time the patient is sick enough to consult a physician. Sometimes it does not appear until convalescence sets in. A blood-culture furnishes the surest means of diagnosis. Typhoid bacilli are demonstrable in the blood in the early stage of invasion, when the only symptom is a slight evening rise of temperature to 99°-99.8° F.

The Bass and Watkins method of performing the Widal macroscopic agglutination test is as follows: Drop on a slide, containing four drops of water, one drop of blood, and mix thoroughly by stirring with a toothpick. Then add and mix an equal amount of a suspension consisting of 10,000 million killed typhoid bacilli per c.c. in 1.7 per cent. sodium chloride solution to which is added 1 per cent. formalin. Tilt the slide from side to side so as to keep the mixture flowing back and forth, when, if the reaction is positive, a grayish mealy sediment will appear in the fluid around the edges within one minute, never later than two or three minutes. (Webster.) H. K. Mulford Co., Philadelphia, furnish the necessary paraphernalia for this test.

R. C. Cabot considers the following method the best: "Measure out in two small test-tubes ten drops and fifty drops respectively of a highly motile twelve- to twenty-four-hour bouillon culture of typhoid bacilli, in which the bacilli have no tendency to adhere spontaneously to each other. Carry these tubes and a microscope to the bedside, puncture the patient's ear as usual, and draw a little blood into a medicine dropper of the same size as that used in measuring out the typhoid culture. Expel one drop of blood into each of the tubes containing the typhoid culture, and examine a drop of each mixture between a slide and cover glass with a high-power dry lens. If within fifteen minutes clumping has taken place in the 1 : 10 mixture, or if within one hour clumping has taken place in the 1 : 50 mixture, the reaction may be considered positive. By clumping I mean an agglutination of the bacilli into large groups and the complete or nearly complete cessation of motility."

"If it is inconvenient to carry the culture and the microscope to the bedside, ten or twenty drops of blood may be milked out of the ear and collected in a test-tube (a three-inch test-tube of small calibre is best). After clotting has taken place, if the edges of the clot are separated from the glass with

a needle or a wire, a few drops of serum will exude, and this serum can be mixed with the bouillon culture in the manner already described." (Cabot.)

Prognosis.—This is never certain. It is better in children than in adults.

Etiology and Prophylaxis.—The typhoid bacillus is transmitted by means of flies, soiled hands, dust, and water and food contaminated with the fæces or urine of persons who have or have had the disease. Foods that are especially likely to become contaminated are water, milk, ice-cream, ice, vegetables, and shell-fish.

In the care of the patient, observe the rules given under Disinfection.

Vaccination with dead typhoid bacilli is of great prophylactic value. To an adult may be given, subcutaneously, in a single injection, 3 c.c. of triple vaccine, containing to each c.c., 500 million typhoid bacilli and 250 million each of paratyphoid A and B bacilli; to a child of 13 to 16 years, ⅔ the adult dose; 8 to 12 years, ½ the adult dose; 5 to 7 years, ⅓ the adult dose; 2 to 4 years, ¼ the adult dose. The relative immunity thus afforded lasts at least two years. Contraindications to typhoid vaccination are any acute infection, no matter how slight, even a coryza, any acute gastro-intestinal disturbance, severe organic disease, tuberculosis, chronic pleurisy, arteriosclerosis, aortitis, myocarditis, noncompensated endocarditis, diabetes, renal insufficiency (hæmaturia, etc., not necessarily albuminuria). Small repeated doses of vaccine may be given in doubtful cases.

Treatment.—Enjoin absolute rest in bed (including the use of the urinal, bed-pan, and goose-neck feeder) in a well-ventilated room. Fresh air is of great importance. The best bed is the woven wire bed with soft hair mattress, upon which are placed two folds of blanket, a rubber cloth, and a sheet. (Osler.)

The diet should be mostly liquid, a selection being made from the following: Milk, raw or boiled, plain, or diluted (to render it more digestible) with about two ounces to the tumblerful of plain water, lime water, Vichy, or Apollinaris, or a pinch of salt and sodium bicarbonate added, or the milk peptonized (see Part 11). About one or two quarts of milk may be given in twenty-four hours.

Buttermilk, koumyss, matzoon, or kefir (Part 11), or malted milk, or cocoa, or junket.

Whey, made by boiling one pint of milk with one or two tablespoonfuls of lemon juice, and straining and expressing the liquid through muslin.

Cream, ice-cream.

Bouillon or strained soups made with beef, veal, mutton, chicken, tomato, potato, oyster, pea, squash, and thickened with powdered rice, arrowroot, or flour.

Raw meat juice made by stirring four parts of finely chopped steak with one part of cold water, allowing it to stand for half an hour in the cold, and then expressing the juice through a cloth or meat press. Three to six ounces may be given in twenty-four hours.

Finely minced lean meat, scraped beef, the soft parts of raw oysters.

Gruels made of barley, arrowroot, rice, cornmeal, cracked wheat, and oatmeal, boiled three hours, strained, and butter and salt added and served with a little cream or milk with sugar; mashed potatoes.

Egg albumen or the whole egg, raw or boiled three minutes, or custard. Albumen water is prepared by shaking together in apposed glasses the whites of one or two eggs, a little lemon or orange juice, sugar, cracked ice, and water up to 4 or 6 ounces.

Flavored gelatine, bovinine, somatose, carnipeptone.

Stale bread or zwieback and butter; milk toast or crackers and milk.

Sugar: one teaspoonful to each milk feeding; sugar in lemonade; lactose.

Apple-sauce, blanc mange, wine jelly, soft puddings, fruit juices.

Water freely in the form of barley water or lemonade, five to six quarts daily, sucked through a rubber tube with a glass mouthpiece. If the patient is delirious or toxic, administer the water regularly every hour or oftener. It may be given by bowel or subcutaneously if need be. Cream of tartar may be added as a diuretic, one teaspoonful to the pint or quart (see Part 11). The more urine passed, the better the prognosis.

The following schedule (high caloric: Coleman) may serve as a guide:

7 A. M.—Milk, 6 ounces, with cream, about one tablespoonful; cane, malt, or milk sugar, one teaspoonful, and lime or barley water several tablespoonfuls. One egg, raw or boiled two or three minutes; or instead, a well-cooked gruel. Stale bread crumbs or zwieback and butter. Fruit juices (orange, lemon, grape, strawberry, etc.) as much as desired.

10 A. M.—Albumen water.

1 P. M.—Milk, 6 ounces, with cream and sugar, etc. One egg with stale bread crumbs and butter; or finely minced or scraped

meat with stale bread and butter; or a strained and thickened soup.

4 P. M.—Albumen water.

7 P. M.—Milk, cream and sugar mixture. One egg and stale bread crumbs. Dessert.

11 P. M.—Albumen water, malted milk, or cocoa.

3 A. M.—Albumen water, malted milk, or cocoa.

The above dietary may be modified to suit each individual case. If the abdomen becomes distended, or curds appear in the stools, or diarrhœa occurs, reduce the quantity of milk; or substitute albumen water made with the whites of two or three eggs; or whey, 4 ounces, beaten up with one egg and a teaspoonful of sugar, and if desired, about two teaspoonfuls of sherry wine; or buttermilk, koumyss, matzoon, peptonized milk, or boiled milk. The gruel, too, may be dextrinized by adding "cereo" (Cereo Co., Tappan, New York), one teaspoonful to the pint of gruel after cooking and then cooling to a little above bloodheat. Leave out the yolk of egg and beef-tea if diarrhœa is present, and give a combination of egg albumen, arrowroot, cornflour, cinnamon or nutmeg, with boiled milk and perhaps a little brandy. In the presence of constipation give beef-tea, boiled bread with milk, oatmeal, honey and syrups, fruit juices, apple or apricot sauce; an occasional morning saline (see Part 11).

Be careful not to overfeed the patient, nor yet to underfeed. Keep a three- or four-hourly chart.

Swab the tongue, cheeks, teeth and gums every four hours with a mixture of glycerine, ℥iv, boric acid, ℥i, carbolic acid, ♏xx, and water to ℥iv, or glycerine and peppermint water, aa ℥i, with the juice of a lemon, using for the purpose a cotton stick or a cotton or gauze sponge held with hæmostatic forceps. Anoint dry lips with vaseline, cocoa butter, or alboline.

Cleanse the whole body once daily with soap and water followed by an alcohol rub and the dusting of talcum powder in the flexures and folds. Rub the back and bony parts subject to pressure with alcohol several times a day, and otherwise guard against bed-sores as directed under Bed-Sore.

Give a soapsuds enema every second day, if needed, but no purgatives except perhaps an occasional morning saline. Some advocate in the very beginning a large dose of calomel, gr. iv, followed by a saline cathartic.

Whenever the temperature reaches or exceeds 102.5° F., sponge the body, especially the back, with cold water for about thirty minutes; or apply cold packs, beginning with tepid ones, followed by others of increasing coldness; or best of all, employ tub-baths, beginning perhaps with a temperature of 90° F., and cooling to about 70° to 65° F., if not uncomfortable; or the lower temperature may be used at the start. "The addition of half a pound of alum to the water is an advantage," says Osler. The patient is supported in the tub by canvas strips attached to the sides of the tub by clamps. Continue the bath for twenty minutes, with constant rubbing except of the abdomen; but remove the patient at once should any untoward symptoms develop. The ears should be plugged with cotton and cold compresses applied to the head while in the bath. After the bath, wrap the patient in sheets and blankets, and give hot drinks, and if there is no reactionary after-glow, apply hot water bottles. After ten minutes rub the patient dry and replace the gown, etc.

An oil-cloth tub in bed may be improvised by tying a loop of rope around the head-board, another around the foot-board, and connecting them by two parallel ropes to which the edges of a piece of oilcloth, passed under the patient, are attached with clothespins. (Haven.)

The sponges, packs, or baths should be repeated every three or four hours, as required.

The purpose of the tub baths, according to their advocates, is not only to reduce fever, but chiefly to increase the elimination of toxins and the patient's resistive powers by healthful stimulation of the nervous circulatory, respiratory, and excretory functions. Contraindications to their use are: severe abdominal pain, hemorrhage, peritonitis, great prostration, phlebitis, cholecystitis, otitis media, meningismus.

Ortner praises pyramidon as an antipyretic, gr. iii to iv (sometimes even 6 grs. at the beginning), every two hours day and night as long as there is any fever. If desired, he says, caffeine sodim benzoate, gr. iii to ivss, may be given with it to protect the heart. It has never been injurious, says Ortner, and it eliminates the "typhoidal" character of the disease. Quinine hydrochlorate, gr. vii, on three successive evenings, is also of use when hydrotherapy is impracticable or contraindicated.

Osler says: "It is usually advisable to give urotropin after the second week, gr. xx to xxx daily," to be continued throughout convalescence.

Salomon reports remarkable results with the following treatment: An initial brisk

saline purge (if the case is seen early), followed by arsenite of copper:

℞ Cupri arsenitis, Merck's, c. p..... gr. ss
Aquæ destillatæ..... ℥vi
Triturate the salt in a mortar before adding the water.
M. Sig.—Shake well and take 1 to 2 drams (gr. 1/100–1/50 of the arsenite) every three hours);

a daily saline colonic enema, and a liquid diet consisting of liquid peptonoids, panopepton, or Hart's alimentary elixir, etc., *e.g.*, of liquid peptonoids, 1 oz. (62.1 calories) every two hours, the whites of three or four eggs daily, in orange or grape juice, water, preferably carbonated, ad libitum (1000 calories in 24 hours); an ice-cap to the head (never to the abdomen); no antipyretics.

Minchin strongly recommends garlic (see Part 11) as an antiseptic.

Serum therapy is reputed of value, especially if employed early, before the eleventh day of fever, and in uncomplicated cases. Rodet gives two, three, or four doses, forty-eight hours apart, beginning with 15 or 20 c.c. and gradually decreasing to 10 to 5 c.c. See Anaphylactic Shock.

Treatment of Symptoms.—Toxæmia and Prostration with Feeble Pulse.—Administer water systematically and bathe frequently. Give whiskey or brandy, 4 to 10 ounces in 24 hours. Change the patient's position every hour or two in such cases and prop with pillows to prevent hypostases. For great restlessness give morphine or hyoscine hypodermically. Lumbar puncture (*q.v.*) is recommended for nervous symptoms (delirium, stupor, etc.), "the fluid being allowed to run as long as it flows under pressure," (Osler); or, according to McCrae, no more than 20 c.c. at one time. In delirium use ice-cap to head.

Headache.—Ice-cap to the head; phenacetin, gr. v, repeated if necessary; or lactophenin, gr. x to xv ("safest and best," Croftan); or codeine, gr. ¼; or morphine hypodermically.

Gastric Indigestion.—Give only albumen water, or water alone; lavage is useful. For nausea and vomiting, try iced champagne or one of the remedies under Vomiting.

Diarrhœa (More Than 3 to 5 Stools Daily).—Restrict the diet to whey or albumen water, and give bismuth, gr. xxx to xl, every four hours (see Part 11), with or without Dover's powder, gr. v, or tincture of opium, ♏v; or prescribe the following:

℞ Plumbi acetatis... gr. viii (gr. ii per dose)
Acidi acetici diluti. ℥i–℥i ℈i (♏xv–xx per dose)
Morphinæ acetatis. gr. ½–⅔ gr. ⅛–⅙ per dose)
Aquæ, q.s. ad..... ℥ii
M. Sig.—One tablespoonful every three hours.

An enema of starch solution, ℥ii, containing tincture of opium, gtt. x to xv, may be effectual. For abdominal pain, apply ice-bag.

Meteorism.—See Tympanites.

℞ Olei terebinthinæ rectificati..... ♏xl-℥ii-℈ii (♏v-xx per dose)
Mucilaginis acaciæ, ℥i
Olei gaultheriæ... ♏viii
Aquæ, q.s. ad.... ℥iv
M. et fiat emulsum.
Sig.—One tablespoonful every three or four hours, with plenty of water. (Continue no longer than 48 hours; and do not give if nephritis is present.)

Employ hot turpentine stupes alternating with plain hot stupes, as described under Tympanites. But attend particularly to the diet; milk may be causative.

Circulatory Feebleness.—Administer strychnine; digitalin; tr. strophanthi; whiskey or brandy; normal saline subcutaneous infusions (0.8 per cent.), 500 to 700 c.c. once or twice daily. Apply an ice-bag to the precordium. For sudden collapse administer camphor hypodermically; or aromatic spirits of ammonia (see Drugs, Part 11).

Abdominal Pain.—Ascertain and correct the cause: meteorism, constipation, improper feeding, diarrhœa, colic, vomiting, distended bladder, enema, painful spleen, old adhesions, hemorrhage, perforation, phlebitis, cholecystitis, pleurisy, pericarditis, appendicitis, peritonitis, intestinal obstruction, liver abscess, suppurating mesenteric glands, cystitis, hyperæsthesia, hysteria, menstruation, labor, abortion, hepatic or renal colic, etc.

Phlebitis and Thrombosis.—See Thrombosis.

Retention of Urine.—Employ hot applications to the hypogastrium and hot enemata before resorting to the catheter.

Bacilluria and Cystitis.—Prescribe urotropin, gr. x, t.i.d.; and irrigate the bladder with warm boiled boric acid solution, ℥i ad Oi, if necessary. Continue the urotropin until no bacilli are present in the urine, *i.e.*, for several weeks if necessary. Biernacki says that the bladder is rendered sterile of typhoid bacilli in ten days.

Bed-Sores.—See Bed-Sores.

Tender Toes.—Keep the weight of the bed-clothes off the toes by means of a cradle. Paint the toes with alcohol and tr. iodi, aa, or with oil of wintergreen.

Cholecystitis.—Apply an ice-bag or hot-water bag. Spontaneous recovery is the rule; but operate at once in the presence of severe pain, distention, and a rising temperature, as perforation may occur (see Cholecystitis). Give urotropin (Part 11) in large doses for chronic cholecystitis.

Orchitis, Parotitis, Mastitis, Periostitis, etc.—Apply an ice-bag. Incise and drain abscesses. Use the Paquelin cautery or morphine for painful bone conditions.

Coxitis.—Apply long splints or sandbags to prevent dislocation.

Hemorrhage.—Elevate the foot of the bed, place an ice-bag to the abdomen (with hot bottles to the feet if necessary), and maintain absolute quiet, giving morphine, gr. 1/6, hypodermically, if the patient is restless. Calcium lactate or chloride (Part 11) and also turpentine, ℥xx, every three or four hours (see under Meteorism), are recommended. Allow no food or water by mouth, excepting ice to suck, for eight to twenty-four hours; then begin with iced whey before returning to milk. The bowels should be kept at rest for at least three days; to this end an enema may be given, consisting of starch solution, ℥ii, and tr. opii, ℥xx. Avoid stimulants.

Perforation.—Operate at once. Incise the abdomen over the seat of greatest tenderness and muscle spasm. Examine the appendix and cæcum, and follow the ilium from the cæcum. Sponge gently the peritoneal cavity and pack off the intestines with gauze while searching for the perforation. Close the latter with a silk purse-string suture, reinforced by a Lembert or mattress suture; or if the perforation is too large, make a fecal fistula. Look for threatened perforations and close them in with a purse-string. Keep the intestinal coils within the abdomen or covered with hot normal saline packs. Carefully wipe up all exudate. Drain by means of a gauze wick which should be removed after thirty-six hours. Place the patient in a semi-sitting posture in bed, and give normal saline solution per rectum by Murphy's method (see under Appendicitis), or subcutaneously. Apply hot water bags. Give morphine if necessary. Begin feeding as soon as nausea is over. Keep fistulous margins anointed with vaseline; the opening usually closes spontaneously (Finney). J. Biernacki allows no food for eight hours, then peptonized whey, ℥ss, every half hour for twelve hours, gradually increased to ℥v every two hours on the second and third days, then milk added, then milk alone.

Management of Convalescence.—Withhold solid food for about a week to ten days after the temperature has returned to normal; then add to the dietary by degrees until regular diet is resumed. Prop the patient up in bed about a week after defervescence; a few days later let him sit up; the time out of bed is very gradually lengthened until he is strong enough to be up all day. A rapid or slow heart calls for rest. Three to six months of rest is advisable. Slight fever sometimes persists. For constipation, employ high enemata of water or oil, and mild laxatives, such as cascara, compound licorice powder, or aloin, strychnine, and belladonna pills (see Part 11) For persistent diarrhœa, which may mean ulceration in the colon, restrict the diet, and administer bismuth and antiseptic and astringent injections (see Enteritis, Chronic). For emaciation, prescribe a daily oil rub; for anæmia, Blaud's pills; for œdema of the feet on walking, rest and elastic stockings. For the typhoid spine (acute painful symptoms; sometimes paralyses), fix the patient upon a Bradford bed frame, as in acute Pott's disease, until the very acute symptoms have subsided, then apply a plaster jacket or Taylor brace (see Pott's Disease, in Part 10, Orthopædics). The Paquelin cautery is useful for the relief of pain. The condition is usually cured in six months. It may be hysterical (Osler).

In bone lesions the diseased parts must be removed.

The mental and physical capacity for work and the memory will return in time. The post-typhoid nervous disturbances usually disappear eventually.

Typhoid Spine.—See under Typhoid Fever.

Typhus Fever.—Gr. τῦφος stupor. An acute infectious, usually epidemic disease of unknown cause, transmitted by the body louse, and characterized by an incubation period of five to twenty-one days, followed abruptly by headache, vertigo, vomiting, epistaxis, cough, congestion of the face and conjunctivæ, general pains, chills or chilliness, fever, and prostration, and about the third to sixth day a macular morbilliform rash, in places petechial; there are usually high fever, delirium, and severe toxæmia, and if death does not occur, the symptoms decline, often by crisis, between the tenth and fifteenth days, and convalescence follows, with fine cutaneous desquamation. Severe hemorrhagic cases sometimes occur. Possible complications are myocarditis, bronchitis, pneumonia, gangrene of various parts, periostitis, peripheral neuritis, suppurations, phlegmasia alba dolens.

It is a rare disease in the United States and Canada. It predominates in cold weather.

Prognosis.—The mortality is high after middle life, and in alcoholics and those in unsanitary circumstances. It is very low in the young.

Treatment.—Isolate the patient, and treat him as in typhoid fever, except that the bowels should be kept active. Immune serum obtained from the horse or ass is administered hypodermically, 10 to 20 c.c. daily until defervescence. Allow water ad libitum, to promote diuresis, and administer cardiac tonics as required. A thorough soap and water bath should be given at once, followed by bichloride, 1 : 2000, to destroy louse-eggs; the hair should be clipped. The personal and bed clothing should be boiled or soaked in bichloride, 1:500. Fumigate the infected room with formaldehyde and sulphur (see Disinfection); and keep the room sealed for twelve hours. The patient should be quarantined for not less than four weeks.

Ulcerative Stomatitis.—See Stomatitis, Ulcerative.

Ulcer, Buccal.—L. *ulc'us; buc'ca*, cheek. See Stomatitis Vesiculosa; Stomatitis Ulcerosa; and Glossitis.

Ulcer, Colonic.—See Enteritis.

Ulcer, Cutaneous.—L. *ulc'us*, ulcer; *cut'is*, skin. The commoner causes of cutaneous ulceration are traumatism, burns, frostbite, simple pyogenic infection, diphtheria, ecthyma, varicose veins, decubitus, herpes, chancroid, syphilis, tuberculosis, and carcinoma. Rarer causes are leprosy, glanders, erythema induratum, oriental sore, craw-craw, granuloma inguinale tropicum, phagedena tropica, ulcerating granuloma of the pudenda, and the various causes of trophic or perforating ulcer (locomotor ataxia, dementia paralytica, syringomyelia, fracture of the spine, spina bifida, cord tumor, hemiplegia, Friedreich's ataxia, progressive muscular atrophy, myelitis, multiple neuritis, division of the peripheral nerves, diabetes, chronic alcoholism, arteriosclerosis, thromboangitis, see Gangrene of the Skin, in Part 5, Skin Diseases, etc.), etc.

Treatment.—Attend to the cause. Cleanse the ulcer with castile soap and warm water, and apply warm boric acid fomentations until swelling and pain subside, at the same time keeping the limb elevated. Then dust the ulcer with sterile powder, such as boric acid, iodoform, bismuth, aristol, iodol, etc.; or apply sterile boric ointment, 10 per cent., or equal parts of balsam of Peru and castor oil, or ung. hydrarg. ammoniati (see Part 11), or 1 per cent. Grübler's Fuchsin in Lanolin (highly praised by W. H. Donnelly).

Ionic medication is well recommended (see under Inflammation). Pack the ulcer with absorbent wool or lint soaked with the selected electrolytic solution. Finzi recommends that 2 to 3 milliampères of current be employed per square centimetre of surface, for two to four minutes. The treatment may be repeated every seven days. If the ulcer does not heal satisfactorily, give large doses of potassium iodide (Part 11) and continue the ionization.

Centripetal massage is of benefit in all forms of chronic ulcer; as is also baking with dry hot air (temp. 250° to 300° for twenty to thirty minutes, thrice a week).

Indolent ulcers may be stimulated by thorough scraping, or by cauterization every few days with silver nitrate, pure carbolic acid followed with alcohol, or zinc chloride 10 per cent.

The actual cautery may be employed for phagedenic ulcers.

In the case of chronic ulcers which will not heal because of constriction of the blood supply by scar tissue, make multiple radiating incisions through the scar tissue, or a circular incision through the thickened skin, about one to three centimetres from the ulcer.

The following treatment is well recommended for non-inflamed callous ulcers: Draw the edges of the ulcer together with overlapping strips of one-inch-wide zinc oxide adhesive plaster, which should cover the entire ulcer and nearly encircle the leg. Change the plaster every twenty-four to forty-eight hours.

If it is decided to cover the denuded area with skin grafts (Theirsch grafts), first subdue all inflammation, and curette away granulations; or the ulcer may be first excised.

To prevent perforating ulcers, avoid pressure from shoes and much walking, and pare callosities. Rest constitutes the best treatment of trophic ulcers. Sequestra may require removal. Amputation is sometimes necessary.

For the treatment of varicose ulcers, see Varicose Veins.

Chronic ulcers and unhealthy sores are markedly improved and cured by means of radiotherapy, employed as in eczema.

Ulcer, Duodenal.—See Gastric and Duodenal Ulcer.

Gastric.—See Gastric and Duodenal Ulcer.

Intestinal.—See Enteritis Chronica.

Lingual.—See Glossitis.

Mouth.—See Stomatitis Vesiculosa; Stomatitis Ulcerosa; and Glossitis.

Œsophageal.—See Œsophagitis, Chronic.

Perforating.—See Ulcer, Cutaneous.

Rectal.—See Proctitis.

Rodent.—See Carcinoma Cutis, in Part 5, Skin Diseases.

Ulcer, Skin.—See Ulcer, Cutaneous.

Stomach.—See Gastric and Duodenal Ulcer.

Tongue.—See Glossitis.

Varicose.—See Varicose Veins.

Ulnar Nerve.—See Brachial Plexus.

Uncinariasis.—See Ankylostomiasis.

Unconsciousness.—See Coma.

Undulant Fever.—L. *un'da,* wave. See Malta Fever.

Uræmia.—Gr. οὖρον urine + αἷμα blood. A toxæmia due to renal insufficiency, and manifested by the following variable symptoms, which are either acute or chronic: headache, dizziness, drowsiness, hiccough, transient dimness or loss of vision, transient paralyses and aphasia, nausea and vomiting, diarrhœa, pruritus, paræsthesiæ, cramps in the muscles of the calves, stomatitis, urinous breath, dyspnœa, Cheyne-Stokes respiration, restlessness, muscular twitching, convulsions, delusional insanity, delirium, mania, coma. (In obstructive anuria, *q.v.*, these symptoms may be absent—latent uræmia.) The urine is scanty and contains albumen, and its specific gravity is low. The pulse tension is usually, not always, high. The elimination of phthalein on the administration of phenolsulphonephthalein is "nil or only a faint trace in two hours." Says Osler: "In patients with chronic nephritis in whom the elimination in two hours is below 10 per cent., there is grave danger of uræmia." (See Urinalysis and Metabolism.)

Differentiate uræmia from other causes of coma (*q.v.*) and convulsions (*q.v.*).

Prognosis.—In acute nephritis, complete recovery may occur; but in chronic nephritis, if recovery does occur, it is only partial and temporary.

Treatment.—Restrict the diet to milk, 1 quart, diluted with 8 ounces of lime water, per day. Administer hydragogue cathartics—

Calomel, gr. v to x, with sodium bicarbonate, gr. xx, in a single dose; or divided doses of about 1 gr. every hour until effectual, followed by a saline.

Elaterin, gr. $\frac{1}{15}$ to $\frac{1}{10}$, two or three times during the day.

Compound jalap powder, ʒss to i, in a little water, once or twice a day.

Salines (Part 11).

Croton oil, gtt. ii, upon the tongue, if the patient is unconscious.

Apply dry cups (*q.v.*), mustard poultices, (Part 11) hot linseed poultices, or hot-water bags over the kidneys to increase the flow of urine.

Once daily or oftener give a hot-air, hot-vapor, or hot-water sweat bath, an ice-cap being kept to the head. The hot-air bath may be given under the elevated bed-covering by means of a stove pipe. The most convenient methods of administering a sweat-bath are (1) the use of electric light bulbs beneath the bed-covering, and (2) hot bricks covered with wet towels sprinkled with alcohol. Continue the sweating for from fifteen to twenty minutes to one hour, and give at the same time hot drinks containing diaphoretics, *e.g.*, spt. ætheris nitrosi, ʒss to i, every half to one hour; liq. ammonii acetatis, ʒss to i, every four hours; potassium bicarbonate, gr. xxx, every two hours; or give large normal saline enemas (ʒi ad Oi). Watch the pulse closely during the sweat, and give stimulants if required, *e.g.*, camphor, digitalin, caffeine (see Part 11). After the sweat, rub the patient dry, and cover with woolen blankets.

Rectal irrigations of hot normal saline solution (temp. 120° to 150° F.) are of value.

Large doses of sodium bicarbonate and also dextrose are recommended (see Acidosis). Diuresis may thereby be promptly established.

Venesection and the withdrawal of 12 to 24 ounces of blood, replaced if œdema is not present by normal saline solution given subcutaneously (500 to 1000 c.c.), may be practiced in acute cases in robust patients when the pulse tension is high. The nitrites may be of some service in high tension cases: nitroglycerine, gr. $\frac{1}{100}$ to $\frac{1}{50}$, every fifteen to thirty minutes, until effectual.

Diuretics may be of service in chronic nephritis; but they are not indicated in acute nephritis, in which they may cause dangerous irritation: diuretin; agurin; theocin; caffeine; potassium acetate; potassium bitartrate; infus. scoparii; infus. tritici repentis (see Part 11).

For restlessness, insomnia (*q.v.*) mental disturbance, and dyspnœa, give morphine. Says Osler: "Morphine is of especial value in the dyspnœa and Cheyne-Stokes breathing of advanced arteriosclerosis with chronic uræmia."

For dyspnœa or uræmic asthma are also recommended oxygen inhalations (see under Pneumonia). Croftan considers spt. ætheris, gtt. xx to xxx, well diluted, several times a day, or pure ether in teaspoonful doses by mouth, or 1 to 2 c.c. hypodermically, three or four times in twenty-four hours, the best remedy. Ortner gives two teaspoonfuls internally every half-hour, day and night, or 2 c.c. hypodermically every hour.

For convulsions, administer chloral and potassium bromide per rectum, well diluted,

gr. xx to xxx of the former, and gr. xxx to xlv of the latter; to be repeated after two hours, if required. Hyoscine hydrobromide, gr. $\frac{1}{100}$ to $\frac{1}{50}$, hypodermically, is also recommended. Administer chloroform by inhalation until the chloral has had time to act.

For vomiting, see Vomiting.

Thyroid extract in large doses (gr. x, t.i.d.) is reputed to be of value as an antidote to nitrogenous poisoning in uræmia.

Ureteral Calculus.—See Nephrolithiasis.

Urinalysis.—Use for analysis a mixed twenty-four hour sample of the urine. Instruct the patient to empty the bladder, say at 7 A. M., throw the urine away, and save all subsequent voidings up to 7 A. M. the next morning. The urine should be kept well corked in a cool place. To obtain uncontaminated bladder urine, take the urine voided in the second of two glasses.

Amount.—The average normal excretion in adults is about 1200 to 1500 c.c. in twenty-four hours; or more correctly, about 1 c.c. per kilo ($2\frac{1}{4}$ pounds) per hour in adults; about 4 c.c. per kilo per hour in children.

Reaction.—Test the reaction by means of litmus paper (see Alkalinuria).

Specific Gravity.—Test the specific gravity, first removing foam with filter paper. The urinometer should float perfectly free in the cylinder. Take the reading from the lower meniscus of the urine as seen from below.

The normal specific gravity of the twenty-four-hour urine is 1.015 to 1.020 (average) to 1.025. The last two figures of the s.g. x 2.33 equals the number of grams of total solids in 1000 c.c. of urine, which is normally 60 to 70 gms. with a twenty-four-hour excretion of 1500 c.c.; or, the last two figures of the s.g. x number of ounces of urine in twenty-four hours x 1.1. = total urinary solids in grains. The urea is usually about one-half the total solids. The normal amount of urea in twenty-four hours is 15 to 40 gms. The last two figures of the s.g. (provided no albumin or sugar is present) indicate practically the percentage of urea, *e.g.*, a s.g., of 1.015 = 1.5 per cent. urea.

Albumin.—Filter the urine if cloudy, first shaking it if necessary with powdered charcoal, mag. oxide, mag. carbonate, barium carbonate, silicic acid, sawdust, or lime water.

Boil the urine—a cloudiness means calcium phosphate (rarely calcium carbonate) or albumin. Cloudiness of the urine which clears up on heating is due to urates.

Add dilute acetic acid (5 per cent.) drop by drop—a clearing means phosphates (effervescence indicates carbonates); clouding means albumin. Remember in adding the acetic acid that albumin is soluble in a very slight excess of acid; therefore add only a few drops. Indeed the urine, when voided, may be too acid to show albumin, and may have to be neutralized with an alkali.

Acidulate the urine strongly with acetic acid; then add a few drops of a 10 per cent. solution of potassium ferrocyanide, drop by drop—turbidity means albumin. An excess of potassium ferrocyanide will dissolve the precipitate first formed.

Add to the diluted urine in a test-tube concentrated nitric acid introduced to the bottom of the test-tube by means of a glass pipette. The occurrence of a white ring *at the zone of contact* of the two fluids means albumin. The ingestion of turpentine, copaiba, cubebs, sandal-oil, and benzoin interferes with the value of this test; but these resins may first be removed by shaking the urine with ether.

Add to the acidulated urine a small fragment of solid sulpho-salicylic acid—turbidity or a white flocculent precipitate means albumin.

To estimate the quantity of albumin, fill Esbach's albuminometer with urine to U, slightly acidulate with dilute acetic acid, then add to R the following solution, *e.g.*, phosphotungstic acid, 1.5 gms., concentrated HCl, 5 c.c., alcohol, 95 per cent., *q.s.* ad 100 c.c. Reverse the tube several times, and allow it to stand for twenty-four hours, or until the supernatant fluid is water-clear. The figures on the scale indicate grams of albumin per 1000 c.c. of urine. This, divided by 10 gives the percentage. If much albumin is present, the urine must be diluted, the s.g. should be below 1.008.

A quicker and more accurate method is that of Purdy: To a graduated Purdy tube add 10 c.c. of urine, 3 c.c. of a 10 per cent. aqueous solution of potassium ferrocyanide, and 2 c.c. of 50 per cent. acetic acid. Mix thoroughly and allow it to stand for ten minutes; then centrifuge for three minutes in an electric centrifuge at the rate of 1500 revolutions a minute. Then read off the percentage on the tube, each division representing 1 per cent. by bulk or 0.021 per cent, by weight of albumin. The radius of the centrifuge with tubes extended must be $6\frac{3}{4}$ inches.

Microscopic Examination.—Examine the sediment of the centrifuged urine for red blood-cells (see Hæmaturia), leucocytes (see Pyuria), casts—hyaline, granular, blood, leucocyte, epithelial, waxy, fatty (do not confuse the

tapering cylindroids with casts), crystals (leucin, tyrosin, etc.), and bacteria.

Bence-Jones's Proteid or Albumose.—Heat the acidulated urine very slowly. At between 50° and 60° a cloudiness begins to appear, which becomes denser, but almost or entirely disappears when the boiling point is reached. On cooling, the precipitate reappears. Add concentrated nitric acid, drop by drop. A precipitate appears which disappears on shaking, but persists if more acid be added. Heating causes the precipitate to dissolve, to reappear on cooling. (See Multiple Myelomata of the Bones.)

Glucose.—Albumin must first be removed before testing for sugar. Always perform several different tests.

1. Fehling's Test.—Reagents used: A. Copper solution: pure crystallized copper sulphate, 34.64 gms., distilled water, *q.s.* ad 500 c.c.; B. Alkaline solution: Rochelle salt, 173 gms., sodium hydrate, 50 gms., distilled water, q.s. ad 500 c.c.

Mix equal quantities of the two solutions and boil; then add the diluted urine (freed from albumin by acidulating with acetic acid, boiling, and filtering), drop by drop, no more than 10 to 20 drops, and again boil for only a few seconds. A positive reaction is indicated by a yellow (hydroxide of copper) or red (cuprous oxid) precipitate. If only traces of sugar are present, the precipitate may only form on cooling.

Other reducing agents of copper are conjugated glycuronic acid, homogentisic acid (alkapton), lactose, maltose, pentose, creatinin, excess of uric acid, ammonium compounds, albumin, allantoin, mucin, pyrocatechin, hydroquinone, bile pigments. Remember that codeine is excreted as a glycuronate.

Quantitative Fehling's Test.—Mix in a flask 10 c.c. each of the copper and alkaline solutions and 30 c.c. distilled water. Dilute the urine, freed from albumin, with distilled water, five times (*i.e.*, four parts of water added) if the s.g. is approximately 1.030, ten times if over 1.030. Fill a graduated burette with the diluted urine. Boil the Fehling's solution and add the urine a little at a time, boiling the mixture at each addition of urine. Continue to add urine and boil until the blue color disappears immediately after boiling. When this occurs, note the amount of diluted urine used, divide this by 5 or 10, according to the degree of dilution, and the resulting figure represents the amount of urine containing 0.05 gm. of glucose (10 c.c. of the copper solution being reduced by 0.05 gm. of glucose.) The amount of sugar contained in the whole twenty-four-hour urine is then equal to—

$$\frac{0.05}{\text{c.c. urine containing 0.05 gm. sugar}} \times \text{24-hour quantity of urine;}$$

or—(0.05 x 5 or 10 x twenty-four hour quantity of urine) ÷ c.c. of diluted urine used in the reaction = the total twenty-four-hour excretion of sugar.

2. Benedict's Test.—Dissolve sodium or potassium citrate, 173 gms., and crystallized sodium carbonate, 200 gms. (or half the amount of the anhydrous salt) in about 700 c.c. of water, and filter if necessary. Dissolve copper sulphate (C.P. crystallized), 17.3 gms., in about 100 c.c. of water and pour into the alkaline solution; cool, and add water to 1 litre.

To 5 c.c. of this reagent add not more than 8 or 10 drops of urine; boil vigorously for one or two minutes, and allow to cool. In the presence of glucose, a diffuse red, yellow, or greenish precipitate appears; but it appears only on cooling if the amount of glucose is small (under 0.3 per cent., says Webster). In the absence of sugar the solution remains clear or else shows a faint blue turbidity due to urates. Benedict's reagent is about ten times more sensitive to urinary sugar than are the other copper solutions, it is not appreciably reduced by creatinin and uric acid, nor by such preservatives as chloroform, chloral, or formaldehyde, but is promptly reduced by the alkapton acids and the conjugated glycuronic acids.

3. Nylander's Bismuth Test.—Nylander's Reagent.—Rochelle salt, 4 gms., dissolved in 100 c.c. of a 10 per cent. caustic soda solution; bismuth subnitrate, 2 gms., added; and the whole heated over a water bath until as much of the bismuth as possible is dissolved. After cooling, filter, and keep in the dark.

Add 1 c.c. of Nylander's solution to 10 c.c. of urine, free of albumin, and boil several minutes. A gradually blackening precipitate of metallic bismuth indicates the presence, usually, of sugar. The same reaction is caused by conjugated glycuronic acid, excess of urinary pigment, pentoses, and ingested chloral, salol, turpentine, antipyrin, sulphonal, trional, salicylic acid, camphor, quinine, senna, eucalyptus, asparagus, and rhubarb.

4. Fermentation Test.—Urine with a s.g. of 1.018 to 1.022 should be diluted twice; 1.022 to 1.028, five times; 1.028 to 1.030, ten times. It should be acid, and should be sterilized by boiling.

To 10 c.c. of the urine thus prepared, in

Einhorn's saccharimeter, add one gram of perfectly fresh compressed yeast (or ⅙ of a cake or a pea-sized piece of Fleischmann's yeast), and let stand for twenty-four hours in a warm room (temp., 22° to 28° C.). The percentage of sugar is indicated on the scale by the amount of gas formed. This result should be multiplied by the degree of dilution. "Always make a control test with normal urine, since the yeast itself may cause a small evolution of gas." (Futcher.)

R. C. Cabot describes the following fermentation test: Take the s.g. of the urine very carefully, and acidify it with acetic acid, if necessary. Pour 6 to 8 ounces into a wide-mouthed vessel, and add half a cake, crumbled, of fresh Fleischmann's yeast. Set aside in a warm place. After twenty-four to forty-eight hours, test for sugar with Fehling's solution. As soon as the test is negative, take again the s.g. of the filtered urine at approximately the same temperature as before. For every degree of s.g. lost, 0.23 per cent. of sugar has been fermented out of the urine.

The fermentation test is the most reliable single test. Levulose ferments also; but lactose does not ferment within twelve hours.

5. Phenylhydrazine Test.—To 25 c.c. of urine add, if albumin is present, a few drops of a solution of lead acetate, and filter. Acidify the filtrate, if not already acid, with acetic acid, and add ½ to 1 gm. of phenylhydrazine hydrochloride and about 2 gms. of sodium acetate; mix thoroughly by shaking; and heat in a boiling water bath for one or two hours, adding water if the salts do not dissolve. Filter while hot, and then cool the test-tube by immersing it in cold water; or better, allow it to cool slowly. A yellow deposit of phenylglucosazone needles, arranged under the microscope in sheaves and stars, and melting at 204° to 205° C., indicates the presence of glucose. To determine the melting point, first purify the crystals by dissolving them in hot 60 per cent. alcohol and recrystallizing by adding water and evaporating the alcohol. Then place the crystals in a perfectly dry capillary tube, seal one end of the tube, and attach it to a thermometer by means of a narrow rubber band cut off from rubber tubing, so that the crystals will be opposite the middle of the bulb of the thermometer. Suspend the bulb in a beaker of water so that it is completely immersed. Heat the water gradually, and note the temperature of fusion.

Diacetic Acid.—Gerhardt's Test.—To 10 c.c. of freshly voided urine (diacetic acid is very volatile and disappears from the urine in a short time) add a solution of ferric chloride until all the phosphates are precipitated as iron phosphate. Filter, and continue to add ferric chloride to the filtrate, drop by drop. The presence of diacetic acid is indicated by the appearance of a claret or Bordeaux-red color. Salicylic acid, meconic acid derived from opium, carbolic acid, antipyrine, phenacetin, etc., give the same reaction. If the reaction occurs after boiling the urine, so as to drive off any diacetic acid present, it indicates the presence of one of the above-named substances.

Arnold's Test Modified by Lipliawsky.—Two reagents are used, (1) para-amido-aceto-phenon, 1 gm., dissolved in distilled water, 100 c.c., and concentrated HCl, 2 c.c., added; (2) sodium nitrite, 1 per cent. solution.

To a mixture of 6 c.c. of solution (1) and 3 c.c. of solution (2), add an equal volume of urine (filtered through animal charcoal if highly colored) and a drop of ammonia, and shake, when a brick-red color will appear (in any urine thus treated). Now treat 10 drops to 2 c.c. of this mixture (according to the probable content in diacetic acid) with 15 to 20 c.c. of concentrated HCl, 3 c.c. of chloroform, and 2 to 4 drops of ferric chloride solution. Close the test-tube with a cork and shake gently for one-half to one minute. The presence of traces of diacetic acid is indicated by a violet coloration of the chloroform, which would otherwise be yellow or light red. Acetone, β-oxybutyric acid, salicylic acid, meconic acid derived from opium, carbolic acid, antipyrine, and phenacetin do not give this reaction.

Acetone.—Legal's or LeNobel's Test.—To 10 c.c. of perfectly fresh urine, add a few drops of a fresh solution or a crystal of potassium or sodium nitroprusside. Then add a solution of caustic soda or potash until the fluid is strongly alkaline. A ruby-red color means acetone or creatinin. Now add glacial acetic acid: a carmine or purplish red color means acetone; a yellow changing to green or blue means creatinin.

Acetone is a decomposition product of diacetic acid, so that the acetone test is also a diacetic acid test. Indeed, diacetic acid gives this reaction.

Frommer's Test (the best).—Add about 1 gm. of solid caustic potash to 10 c.c. of urine, and before complete solution occurs, add 10 to 12 drops of a 10 per cent. solution of salicyl aldehyde in absolute alcohol; now warm to 70°. In the presence of acetone a purplish-red ring appears at the zone of contact of the potash solution and the salicyl aldehyde. Diacetic acid does not show this reaction except after prolonged heating.

Beta-Oxybutyric Acid.—Hart's Test.—Dilute 20 c.c. of urine with an equal volume of water, add a few drops of acetic acid, and boil down to about 10 c.c., in order to remove acetone and diacetic acid. Now add water to 20 c.c. and divide equally between two test-tubes. To one of these add 1 c.c. of hydrogen peroxide, warm gently, allow to cool, and then add ½ c.c. of glacial acetic acid and a few drops of a freshly prepared aqueous solution of sodium nitroprusside. Mix and overlay with 2 c.c. of concentrated ammonium hydroxide (Lange's test for acetone). Allow the tubes to stand for a few hours. The tube containing the H_2O_2 shows a red zone while the other tube does not.

Ammonia Output.—The significance of the ammonia output is as follows: Beta-oxybutyric acid and its derivatives, diacetic acid and eventually acetone, are products of the incomplete oxidation of fats (favored by starvation and by the deprivation of carbohydrates). To eliminate these poisonous acids, the body provides ammonia from its protein, and calcium from the tissues generally; therefore the increased ammonia output, and also the wasting. The normal output of ammonia is 0.85 gm. in twenty-four hours. An increase to 1.5 to 4.0 grams is an indication of acidosis.

Formalin Method.—Dilute 10 c.c. of urine with 50 c.c. of water, add 2 or 3 drops of a 1 per cent. alcohol solution of phenolphthalein and neutralize with $N/_{10}NaOH$. (See under Quantitative Analysis of the Gastric Juice, under Dyspepsia). To the neutralized urine add 5 c.c. of formalin which has also been prevously neutralized with $N/_{10}NaOH$. Formaldehyde acts upon ammonium salts forming hexamethylen-tetramin and liberating the acid combined with the ammonia. The acid can then be determined by titration. Titrate with $N/_{10}NaOH$ to the appearance of a faint, permanent pink color, noting the amount of alkali used. Since 1 c.c. of $N/_{10}NaOH$ represents 0.001704 gram of NH_3, to calculate the ammonia in 10 c.c. of urine, multiply this figure by the number of c.c. of $N/_{10}NaOH$ used.

Urea Output.—The normal urea output is 15 to 40 grams per diem. Urea is derived from the nitrogen both of the food and of the tissues.

Fill a Doremus ureometer with a freshly prepared solution of sodium hypobromite, made by adding 1 c.c. of bromine to 40 c.c. of cold sodium hydrate, 20 per cent. solution. Add 1 c.c. of urine. As soon as the evolution of gas has ceased (5 to 10 minutes), read off the amount of urea directly from the calibrations of the tube. This test gives only approximate results. The best test is that of Marshall.

Chloride Estimation.—The chlorides may be estimated approximately by Purdy's centrifugal method. In a centrifuge tube graduated to 15 c.c. place 10 c.c. of filtered albumin-free urine (see below), add 1 c.c. of strong nitric acid and 4 c.c. of a 5 per cent. silver nitrate solution, shake by inversion and allow to stand for a few minutes. Then centrifuge for three minutes at the rate of 1200 revolutions per minute, and read off the bulk percentage of silver chloride. One per cent. of silver chloride by bulk represents 0.13 per cent. by weight of NaCl and 0.08% of Cl.

To free the urine from albumin, acidify a definite volume with acetic acid, boil, and filter, and wash the precipitate thoroughly with a definite volume of water, say twice the original amount of urine employed. Use 10 c.c. of this filtrate for the above test, and multiply the results by three.

The normal kidney will excrete five drams of ingested sodium chloride within twenty-four hours; whereas, in renal insufficiency, several days may be required. The chlorides are derived entirely from the food.

Indican.—See Indicanuria.

Tests of Renal Function.—1. Phenolsulphonephthalein or "Red" Test of Rowntree and Geraghty:

Phenolsulphonephthalein	0.6 gm.
Sodium hydroxide, 8 per cent. solution	0.84 c.c.
Sodium chloride, 0.75 per cent. solution, q.s. ad	100.0 c.c.

Add 2 or 3 drops more of the sodium hydrate solution, when the color of the solution will change to a Bordeaux-red, and it will become less irritant when injected (the monosodium salt of phenolsulphonephthalein originally present is slightly irritant). Each c.c. of this solution contains 6 mg. of the phenolsulphonephthalein. One c.c. ampoules may be obtained from Hynson, Westcott and Dunning, Baltimore, Md.

Technique.—Give the patient, twenty to thirty minutes before applying the test, 300 to 400 c.c. of water, to ensure an adequate urinary flow. At the expiration of the twenty or thirty minutes, a catheter may be introduced and the bladder emptied; but some regard catheterization as undesirable. Noting the time, inject subcutaneously into the upper arm, or intramuscularly, one c.c. of the sterilized test solution, using an accurately graduated syringe. Allow the urine to drain through the catheter into a test-tube containing a drop of 25 per cent. sodium hydrate solution. Note the time of appearance of the first pinkish tinge. Now,

unless the patient has a urinary obstruction, withdraw the catheter, and have the patient empty his bladder into a receiver at the end of one hour, and again into another receiver at the end of another hour. In the presence of urinary obstruction, keep the catheter in the bladder, and corked, and drain the bladder at the end of each hour.

Measure the quantity of urine in each receiver and ascertain the specific gravity (*q.v.* above).

Now add to each sample of urine sufficient 25 per cent. NaOH to make the urine decidedly alkaline so as to elicit the maximum color (a brilliant purple-red). Place in a litre-volumetric flask and add distilled water to the litre mark and mix thoroughly. Now filter a small portion and compare it with the standard solution of phenolsulphonephthalein (phen., 3 mg., in water 1 litre, made alkaline with 1 or 2 drops of 25 per cent. NaOH), using the Duboscq or the Rowntree and Geraghty modification of the Autenrieth-Königsberger colorimeter. Adjust the standard solution to the 10 mm. mark, and make the color of the unknown solution to correspond. If, to illustrate, the reading of the unknown solution is found to be 20, then only 50 per cent. as much dye is contained in it as in the standard solution, *i.e.*, the excretion equals 50 per cent. of the 3 mg. of the standard solution, or 25 per cent. of the 6 mg. injected. Make readings until the drug is completely eliminated.

Says Webster: "In normal cases it has been found that the time of appearance varied from five to eleven minutes and that 40 to 60 per cent. of the drug was excreted in the first hour and 20 to 25 per cent. in the second hour. The excretion of the drug does not run parallel to the excretion of water. The smaller the amount of urine in normal cases, the greater the concentration of the drug. It is immaterial, so far as the excretion of the drug is concerned, whether the urinary output is 50, 200, 400, or more c.c."

A delay in the time of appearance of the drug beyond twenty-five minutes, and an output for the first hour below 20 per cent., are indications for delaying a contemplated operation until the kidneys become more efficient.

Says Cabot: "In elderly people confined to bed, 40 to 50 per cent. (within two hours) may be considered normal and does not indicate nephritis."

2. Phloridzin Test.—Ten milligrams of phloridzin (or 0.005 gm. (gr. $\frac{1}{12}$)—dissolved in 1 c.c. of a 0.5 per cent. solution of sodium carbonate.—N.N.R.) injected subcutaneously into the buttocks, should be followed by glycosuria in fifteen to thirty minutes, passing off in two or two and one-half to four hours, one to two grams of glucose being excreted.

3. Indigo Carmine Test.—Indigo carmine, 0.16 gm., administered hypodermically, colors the urine in about ten minutes (green deepening to blue), the most being excreted in about an hour.

In the estimation of the separate functional activity of the two kidneys, it is necessary that the kidneys be not palpated for twenty-four hours before the test, that nothing be taken by mouth for at least two hours before the test, and that a twenty-four hour collection of urine be analyzed immediately before the test. The ureteral catheters should be left in for at least two hours. Following ureteral catheterization, an oliguria or anuria occurs, lasting usually no longer than ten minutes in a healthy kidney, but longer in a diseased kidney. The urine voided during this period should be discarded. (Keyes.)

Keep the patient in bed for thirty-six hours after ureteral catheterization and administer urotropin (see Part 11), a diuretic, and water.

"The various urinary segregators," says Young, "are absolutely unreliable."

Urinary Calculus.—See Nephrolithiasis.

Incontinence.—See Enuresis, Part 3, Genito-Urinary Diseases; and Part 2, Gynæcology.

Retention.—See Part 3, Genito-Urinary Diseases.

Suppression.—See Anuria.

Urination, Frequent.—See Polyuria.

Painful.—See Dysuria, in Part 2, Gynæcology; and Part 3, Genito-Urinary Diseases.

Superabundant.—See Polyuria.

Vaccinia; Vaccination.—L. *vac'ca*, cow: cowpox. Vaccinia or cowpox is smallpox modified by passage through the cow.

Vaccination.—First cleanse the skin with soap and water, dry, and apply alcohol. Sterilize a cambric needle by boiling or by heating in a flame. Abrade the skin with the dull end of the needle, taking care not to draw blood. The glycerinated virus is better than the dry virus. Allow twenty minutes for the virus to dry on the arm, then apply a sterile bandage or clean handkerchief.

After an incubation period of about three days, there appears a red papule, which becomes vesicular on about the fifth day. It has a pearly appearance, becomes umbilicated, and surrounded by a deep-red, swollen

areola, and reaches its full size by the eighth day. There is some fever and the neighboring lymphatic glands become enlarged. On the ninth day retrogression begins, and a scab forms, which falls off about the end of the third or fourth week, leaving a circular pitted scar.

Immunity against smallpox is established from the eighth to the eleventh day after a successful vaccination. The protection lasts from seven to ten years. A successful vaccination is protective if performed within three days after exposure to smallpox.

Children should be vaccinated after the age of three months, and at least every five to ten years thereafter, except in the presence of a severe illness. All persons should be vaccinated during the presence of smallpox.

If the first vaccination is unsuccessful, it should be repeated (if necessary at least three times).

Vagus Nerve.—L. *vágus*, wandering. The vagus supplies the pharynx, larynx, œsophagus, heart, lungs, and stomach.

Paralysis of the pharyngeal branches causes difficulty in swallowing (See Dysphagia) of the laryngeal branches, alteration of the voice or stridor (see Aphonia and Stridor in Part 9, Throat Diseases); of the cardiac branches, increased rapidity of the heart's action (see Tachycardia).

The various causes of vagus disease are bulbar paralysis, neoplasms, meningitis, syphilis, neuritis (diphtheritic, alcoholic, etc.), aneurysm.

Pharyngeal spasm, preventing deglutition, may be hysterical or simply nervous. It is one of the prominent symptoms of hydrophobia.

Laryngeal spasm occurs in laryngismus stridulus, the crises of locomotor ataxia, and spastic aphonia (in which spasm occurs on attempting to speak). (See Laryngeal Spasm in Part 9, Throat Diseases.)

Valvular Heart Disease, Acute.—See Endocarditis, Acute.

Chronic.—See Stage of Compensation under Cardiac Insufficiency.

Varicella.—See Chicken-Pox.

Varicose Ulcer.—See Varicose Veins following.

Varicose Veins.—

Etiology.—Adult age; force of gravity; prolonged erect posture; hard work; garters; lack of perivascular support; pregnancy; large abdominal tumors; arteriosclerosis; chronic phlebitis; vasomotor paresis in nervous diseases. The condition is very rarely congenital.

Treatment.—Attend to the cause. Enjoin frequent bathing of the legs, and the wearing of properly fitting elastic stockings, reaching to the knee or higher, or a stockinette or crepe bandage, firmly and evenly applied so as to support the veins. The bandage should be applied before getting out of bed in the morning, and not removed before retiring at night.

For varicose ulcers employ, besides the elastic stocking or bandage, prolonged soaking (for hours) in hot water containing dissolved potash soap (or in eczematous subjects, starch-water), alternately with hot-air baths. If the ulcer is inflamed, bathe with boric acid solution.

For non-inflamed callous ulcers, is well recommended, together with the above treatment, the application of overlapping strips of one-inch-wide zinc oxide adhesive plaster, covering the entire ulcer and nearly encircling the leg, with the object of drawing the edges of the ulcer together. The plaster should be changed every twenty-four to forty-eight hours.

Rest and elevation of the limb hasten healing.

For necessarily ambulant cases, R. A. Bolam well recommends Unna's zinc-gelatine dressing. The ulcer is first carefully cleansed, then dried, and filled with a dusting powder (boric acid, or dermatol, etc.). Then a gauze or muslin bandage is applied to the leg, and the hot jelly brushed on and into the bandage. Another firm bandage is applied, and over all a third protective bandage.

The ulcer may be excised and replaced by Ollier-Thiersch grafts. The internal administration of mercury (see Part 11) is praised for both varicose eczema and ulcer. (See also Ulcer, Cutaneous.)

Should subcutaneous hemorrhage occur, put the patient to bed, apply a compression bandage, and elevate and immobilize the limb.

Should phlebitis occur, whether purulent or not, ligate the saphenous vein at the saphenous opening, and, if feasible, extirpate the inflamed veins en masse. Incise and drain abscesses.

Resection of the int. saphen. vein together with its tributaries below the knee, and sometimes the ext. saphen. vein, is usually curative.

Before deciding upon operation, especially where there is a history of a previous phlebitis, first ascertain whether an elastic bandage applied from the foot to above the knee gives relief. If it causes discomfort it may mean that the superficial veins are

necessary to the circulation of the limb. (Mayo Test.)

Where general anæsthesia is contraindicated, as in diabetes, nephritis, uncompensated cardiac disease, arteriosclerosis, cachexia, extreme obesity, purpura, etc., one may perform, under local anæsthesia, the Trendelenburg operation of double ligation of the internal saphenous vein, near the saphenous opening, with chromic catgut.

Variola.—See Smallpox.

Vegetable Poisoning.—See Poisoning.

Veins, Inflamed.—See Phlebitis.

Varicose.—See Varicose Veins.

Vertigo.—L. *vertig'o*, dizziness.

Causes.—Ocular defects (muscular anomalies, anomalies of refraction and accommodation, diplopia); labyrinthine exudation (Ménière's Disease); auditory nerve disease (tumor, abscess, tabes, Bell's palsy, etc.); otitis media; cerumen, boils, sea-water or foreign bodies in the external meatus; violent syringing of the ears; passage of a galvanic current through the ears; increase of intracranial pressure, especially when due to cerebellar tumor or abscess or frontal tumor; apoplexy; epilepsy; migraine; pellagra; dementia paralytica; locomotor ataxia; multiple sclerosis; neurasthenia; hysteria; anæmia, nasal and laryngeal disorders; gastric and intestinal disorders (gastritis, enteroptosis, constipation, intestinal intoxication, etc.); circulatory disturbances (arteriosclerosis—usually subsides in a few months or years—chronic heart-disease, Stokes-Adams disease, Addison's disease, menopause, anæmia, polycythæmia); malaria; certain poisons (alcohol, nicotine, caffeine, morphine, quinine, salicylates, coal-tar products, etc.); uræmia; severe muscular exertion; sunstroke and heat exhaustion; sea-sickness; kubisagari or Gerlier's disease.

Always examine the ears for deafness, tinnitus, etc. (see Examination of the Ear, in Part 7, Ear Diseases).

Treatment.—Attend to the cause. Keep the bowels active. For gastric vertigo, give a large dose of sodium bicarbonate with or without bismuth in hot water (see Drugs, Part 11).

As a last resort in persistent vertigo, one may consider the operation of dividing the auditory nerve (see Tinnitus, in Part 7, Ear Diseases).

Vesical Calculus.—L. *vesi'ca*, bladder; *calculus*, pebble. (See Gynæcology, Part 2, and Genito-Urinary Diseases, Part 3).

Vesicular Stomatitis.—See Stomatitis Vesiculosa.

Vestibular Nerve.—See Part 7, Ear Diseases.

Vincent's Angina.—See Stomatitis, Ulcerative.

Visceroptosis.—See Splanchnoptosis.

Vitamines.—Besides proteins, carbohydrates, fats, certain mineral salts and water, there is another class of essential food elements, but recently discovered, known as vitamines. They are plant products. Three varieties have thus far been separated, distinguished by their different solubilities in water and other agents, by their varying degrees of resistance to heat and other deleterious influences, and by their different distribution in various foods. They have been designated "fat-soluble A", "water-soluble B," and "water-soluble C."

Fat-soluble A vitamine occurs in the majority of animal fats (lard excepted), and particularly milk fat, cod-liver oil, and egg yolk. It is abundantly present in the green portions of plants, and is present also in grain embryos; but is absent in vegetable fats. It can withstand ordinary cooking temperatures (100°-120° C) for some time. Its prolonged absence from the diet produces xerophthalmos and kerotomalacia.

Water-soluble B occurs in the embryo or germ of grain seeds, in green vegetables, fruit juices, tomatoes, yeast, and milk. It is found in greatest quantity in yeast. When subjected to 100° C (boiling) for thirty minutes, 25 to 30 per cent. is lost. It is destroyed by heating to 120° C. It does not deteriorate by age. Its absence from the diet produces paralysis of the lower extremities; hence it is called anti-neuritic vitamine.

Water-soluble C., or antiscorbutic vitamine, occurs in fruit juices, particularly lemons and oranges, raspberries, tomatoes, carrots, turnips, swedes, green vegetables and fresh meat, particularly liver (cod-liver oil). It is destroyed by age, drying, cooking, and treatment with alkalies. Even milk but 24 hours old does not contain sufficient to prevent scurvy in babies.

Normally there is a sufficient storage of vitamines in the body to last about two weeks.

Volvulus.—L. knotting or twisting. See Intestinal Obstruction.

Vomiting.—L. *vomitaire*, to vomit.

1. Vomiting in Adults and Children past Infancy.—Etiology.—Overfeeding; irritating ingesta; gastric disease (gastritis, acute and chronic, dilatation, ulcer, cancer, cirrhosis); central nervous and reflex irritation arising apparently from any organ of the body, *e.g.*, the stomach, intestines, liver, gall-bladder and bile tracts, pancreas, kidneys, suprarenal glands,

appendix, male and female generative organs, peritoneum ears, eyes, nose, pharynx, larynx, œsophagus, bronchi, lungs, brain, cord, and meninges; toxic influences, *e.g.*, ether, chloroform, morphine, nicotine, arsenic, thyroid extract, hyperthyroidism, uræmia, pregnancy, acute yellow atrophy of the liver, yellow fever, dengue, retrocedent gout, autointoxication, septico-pyæmia, etc.; miscellaneous causes, *e.g.*, sea-sickness; agitation, anger, sorrow, shock, fright, overstudy in the young; great pain; fatigue; masturbation; habit, cough (bronchitis, whooping-cough); cardiac failure; anæmia; leukæmia; purpura; hæmophilia; angioneurotic œdema; paroxysmal hæmobloginuria; pellagra; onset of infectious diseases in children; pernicious malaria and the stage of chill in ordinary malaria; incipient tuberculosis; arteriosclerosis; neurasthenia; hysteria; migraine; locomotor ataxia (gastric crises); nephrolithiasis; cholelithiasis; worms; intestinal obstruction; aneurysm of the abdominal aorta; brain tumor; brain abscess; cerebral syphilis; cerebral venous and sinus thrombosis; etc.; and, finally, the cyclic paroxysmal, recurrent or periodic vomiting of children, of abrupt onset, preceded by furred tongue, offensive breath, and white stools, and abrupt termination, lasting from several hours to two weeks, and recurring every several weeks or months (acetone diacetic acid, and oxybutyric acid occur in the urine practically constantly—see Urinalysis. The disease tends to disappear spontaneously toward puberty).

Treatment.—Attend to the cause. In nervous (neurasthenic and hysterical) cases, prescribe rest in bed, isolation, and perhaps massage, electricity, and hydrotherapy (wet packs): see Neurasthenia, and Hysteria. In employing electricity, place the anode of a galvanic current to the epigastrium and the cathods to the spine, and use a current strong enough to produce visible abdominal contractions, but no longer than ten minutes. In severe cases, it may be necessary to administer food per rectum for two or three days, with normal saline enemata (℥i ad Oi) for the relief of thirst (see Rectal Feeding). Try a liquid diet in very small quantities, *e.g.*, teaspoonful doses of ice-cold milk, cold egg albumen, clam broth, ice-cold champagne or Vichy although solids are sometimes better retained, *e.g.*, scraped beef, eggs boiled three minutes, rice, toast. Gastric lavage may be of service.

To avoid sea-sickness or car-sickness, evacuate the stomach and bowels before starting upon the trip, and restrict the diet during the first few days of the journey. Sodium bromide, gr. xxx to lx, well diluted, taken two hours before starting, may perhaps be of some service in certain cases.

For vomiting of pregnancy, see Part 4., Obstetrics.

In the cyclic or periodic vomiting of children, which is evidently an acidosis, purge the patient freely by means of calomel in divided doses, followed by a saline (see Part 11) and enemas, and administer soda water per rectum (℥i of soda bicarbonate ad Oi), about eight ounces five times a day, or in sufficient amount to render the urine alkaline (see Acidosis). Administer every eight hours a nutrient enema consisting of 6 to 8 ounces of completely peptonized skimmed milk and the whites of two eggs (Kerley). Keep the patient quiet. After the vomiting has ceased for several hours, try the administration of liquids in small amounts—iced milk and lime water, equal parts, koumyss, matzoon (part 11), egg albumen, barley-water, clam broth, etc. The child should lead a quiet, well-ordered life, and the diet should consist principally of milk, stale bread, green vegetables, fruits, meat but once every other day, and cereals in moderation, no sweets. Sodium bicarbonate may be prescribed as a preventive.

Symptomatic Remedies for Nausea and Vomiting.—Alkaline effervescing waters, sipped ice cold, *e.g.*, champagne, Vichy, Apollinaris, Seidlitz powder, or sod. bicarb. in orange or lemon juice.

Cracked ice, alone or with chloroform, gtt. v, every hour; or ice-cold chloroform water in teaspoonful doses.

Lime water, 1 tablespoonful every one or two hours.

Chloroform, gtt. v to x, on sugar or cracked ice every hour.

Ether, gtt.x, on cracked ice every hour.

Menthol in ether, 1:10, gtt. v to x in water, t.i.d.; or menthol, gr.ii to iii, in a teaspoonful of brandy and cracked ice, one teaspoonful, t.i.d.

Carbolic acid, gtt. i, in a teaspoonful of water, every fifteen minutes, for three or four hours.

Creosote, ♏i, shaken up in two tablespoonfuls of lime water.

Tr. iodi, gtt, i, in a teaspoonful of water every ten to thirty minutes.

Tr. iodi, ♏i, and carbolic acid, ♏ss, in water, ℥i, every fifteen minutes for three or four hours.

Resorcin, gr. v, well diluted.

Cocaine, gr. ¼, in a teaspoonful of water, every hour.

℞ Cocainæ hydrochloridi . . . gr. iss (gr. ⅛ ad ℥i)
Syrupi aurantii . . . . . ℥iii
M. Sig.—One teaspoonful every hour until relieved. (Ortner.)

Chloral hydrate, gr. xv, aq. destil., ʒiss; 10 to 20 drops on shaved ice, every two hours.

Sodium bromide, gr. x, in one ounce of milk three or four times a day; or gr. xx in one dose.

Valerian, tincture, ½ or 1 to 2 teaspoonfuls, t.i.d.

Validol (menthol valerate), gtt. v to xv, on sugar or in coffee, once to thrice a day.

Sumbul.

Orthoform, gr. v to x to xv, suspended in water, 3 to 4 to 8 times daily.

Antipyrin, gr. v, every three hours.

Hydrocyanic acid, dilute, ♏iii, in water, cautiously increased to ♏vi-viii.

Tr. belladonnæ, gtt. x, in water, three or four times a day.

Cerium oxalate, gr. ii to v to x, with powdered sugar or bismuth, gr. v to x, every two or three hours.

Wine of ipecac, ♏i, in water, every hour.

Silver nitrate, gr. ¼, with pepsin, gr. ii, in capsule, before each meal.

Pepsin, gr. viii.

Ingluvin, gr. ¼, one-half hour before eating

Calomel, gr. $\frac{1}{10}$, every fifteen minutes.

morphine, gr. $\frac{1}{6}$-¼, with atropine, gr. $\frac{1}{100}$, hypodermically.

Hyoscine, gr. $\frac{1}{100}$–$\frac{1}{80}$, hypodermically.

Hot or cold compresses, or the mustard plaster, or blisters (see Cantharides in Part 11), or electricity (*q.v.*), or the ether spray to the back of the neck and to the epigastrium. the latter may be applied for four or five minutes before eating.

Spruce gum, chewed.

II. Vomiting in Infants.—The condition may be acute, due to acute gastritis or acute indigestion (*q.v.*), poisons, and grossly indigestible food, *e.g.*, watermelon, cucumbers, etc., acute infectious gastro-enteritis (see Diarrhœa in Bottle-Fed Infants and in Early Childhood), parenteral infectious diseases, nervous influences, intestinal obstruction, peritonitis, nephritis, meningitis, brain tumor, etc.; or it may be habitual, due to overfilling the stomach, irregular feeding, too frequent feeding, too rapid feeding, too slow feeding, a long nipple which causes gagging, too much handling after feeding, a tight belly-band or tight clothing, feeding in a reclining position and not allowing the air swallowed during the nursing to be eructated by occasionally holding the infant upright on the mother's shoulder three or four times and patting upon the back until the air comes up; indigestion, the result of casein, fat, sugar, starch, or overfeeding; dilatation of the stomach due to pyloric spasm or stenosis, etc.; too rich mother's milk (in fat or sugar), neuropathic constitution; decomposition or marasmus.

Correct the cause. The nipple should have a hole large enough so that the food drops out freely when the bottle is turned upside down. The child should empty such a bottle in fifteen to twenty minutes. If it does not, pour the balance of the food away at the end of twenty minutes, and give no more food until the next feeding.

Vomiting due to fat, sugar, or starch is corrected, says Dennett, by giving one part milk and two parts water, without sugar, and boiled three minutes, etc., as directed under Infant Feeding: "Treatment of Simple Indigestion, etc." In bad cases boiled diluted skimmed milk must be used. Sometimes the total daily quantity must be reduced and the concentration increased.

The vomiting may be recurrent, due to lowered gastric tolerance. "Such infants," says Dennett, "are best fed with malt soup extract," added to the milk and water mixture in place of cane or malt sugar (see Infant Feeding).

For pylorospasm (vomiting expulsive), increase the frequency and diminish the quantity at each feeding, reduce the fat (albumin milk described under Marasmus may be used) and add sodium citrate, 1-2 per cent. solution one dram in each bottle. Anæsthesin or novocaine, gr. $\frac{1}{60}$ or tr. belladonnæ, 1 to 2 drops, with a few drops of paregoric, may be given before meals (Gerstley). Hill says: "Feed a food low in protein and fat and high in sugar." It is surprising how doctors disagree. For congenital hypertropic pyloric stenosis, see under Dilatation of the Stomach, Chronic.

Wakefulness.—See Insomnia.

Weakness.—See Debility.

Weight.—See Tables under Food Values.

Causes of Gain in Weight.—Normal growth; seasonal changes; occupational changes; carbohydrate or fat diet; convalescence from wasting diseases; obesity; dropsy, evident or latent, due to uncompensated cardiac or renal disease; myxœdema.

Causes of loss in Weight.—Seasonal changes, occupational changes; insufficient or improper food; senility; malnutrition due to chronic dyspepsia, gastric cancer, chronic diarrhœa, marasmus, œsophageal stricture, anorexia nervosa, cholelithiasis, diabetes mellitus, loss of sleep, infectious fevers; toxæmias (hepatic cirrhosis, tuberculosis, etc.); exophthalmic goitre. (R.C. Cabot.)

Weil's Disease.—See Jaundice, Infectious.

Weir Mitchell Treatment.—See Neurasthenia.

Wet-Brain.—See Alcoholism.

Whitlow.—See Felon.

Whooping-Cough; Pertussis.—L. *per*, in-

tensive + *tussis*, cough. An epidemic infectious and contagious disease, mostly of children, due probably to the bacillus of Bordet and Gengou, and characterized by an incubation period of about one or two weeks, followed by a coryza and bronchial catarrh, which lasts about one or two weeks (catarrhal stage), when the cough becomes paroxysmal and is marked by a series of short, rapid, explosive expiratory efforts, accompanied by congestion and cyanolsis of the face, and ending in a long drawn inspiratory whoop, and often vomiting (paroxysmal stage). After lasting for from three to six weeks, more or less, the paroxysmal stage is followed by the stage of decline, of one to several weeks' duration. The leucocytes, particularly the lymphocytes, are increased.

The following complications may occur: hemorrhages due to the intense venous congestion; emphysema, both vesicular and interstitial; pneumothorax; prolapsus ani; ulcer of the frenum linguæ; herniæ; cardiac dilatation; spasm of the glottis; diarrhœal diseases; neuroses and psychoses; convulsions; bronchopneumonia.

Asthma and tuberculosis may follow.

A cough resembling that of whooping-cough may occur in enlargement of the tracheal or bronchial glands, and the presence of a foreign body in the larynx, trachea, or bronchi.

The disease is always serious, and to be dreaded. It is very fatal in infants.

Treatment.—Separate the patient from others and from cats and dogs, which are susceptible to the disease.

Arrange a quiet life (in bed, if necessary to lessen the paroxysms), with plenty of fresh air day and night, and a light nutritious diet, with plenty of water to keep the mucous membranes moist and therefore less irritable. Feed the patient each time he vomits. Give a daily tepid sponge or tub bath. Guard against emotion, exertion, stale air, dust, draughts, heavy meals, cold ingesta, and indigestion, since the paroxysms are aggravated by these influences. A snug abdominal binder should be worn; the Kilmer belt may be used. The sputum should be burned. To guard against reinfection, it is advised that two rooms be used, and each room fumigated with formaldehyde on alternate days (see Disinfection).

Where the paroxysms are too frequent and severe, the following palliative remedies may be employed:

Quinine, gr. $\frac{1}{6}$, t.i.d., for each month of the child's age; and gr. iss for each year, up to gr. v, t.i.d.

Belladonna, tincture, ♏i, or fluid extract, ♏$\frac{1}{4}$, or atropine, gr. $\frac{1}{800}$, for a child of two years, every four hours, gradually increased to every two hours (see Part 11). The drug should be pushed until slight flushing is observed about twenty minutes after its administration, and this dose should be maintained.

Toxic symptoms are dryness of the throat, mydriasis, rapid pulse, and delirium.

Antipyrine or phenacetin, in plenty of water gr. ss-i, every four to two hours for a child of six month; gr. i-ii every six to two hours for a child of eighteen to twenty months (see Part 11). Sodium bromide, gr. ii-iii, or codeine, gr. $\frac{1}{60}$+, may be combined with antipyrine.

Codeine, gr. $\frac{1}{60}$–$\frac{1}{4}$ (*q.v.*) every six to four hours.

Heroin hydrochloride, gr. $\frac{1}{100}$-$\frac{1}{24}$ (*q.v.*), every six to four hours.

Paregoric (*q.v.*).

Kerley has experimented with many drugs, and finds a combination of antipyrine and sodium bromide best in relieving the paroxysms:

℞ Antipyrinæ,..... gr. xviii
(gr. iss per teaspoonful)
Sodii bromidi..... gr. xxx
(gr. iiss per teaspoonful)
Syrupi rubi idæi.. ℥v
Aquæ, q.s. ad.... ℥ii
M. Sig.—One teaspoonful every two hours, six doses in twenty-four hours, for a child fifteen months of age. (Kerley.)

These drugs are given for five days alternately with quinine for five days. They are not commenced until the spasmodic stage is at its height.

Where there is much catarrh, employ creosote inhalations, as in bronchitis (*q.v.*); or a spray of salicylic acid, 2 per cent., or antipyrin, 5 to 10 per cent., or glycerine of carbolic acid, ℥i, and sod. bicarb., gr. x, to the ounce of hot water (Yeo). Administer the spray every one to three hours, for fifteen minutes at a time, and instruct the child to inhale the spray deeply. Discontinue the carbolic acid for twenty-four hours if the urine becomes discolored. Minchin strongly recommends garlic (*q.v.* in Part 11) as an antiseptic.

To render the expectoration more fluid, Yeo prescribes the following:

℞ Sodii benzoatis.... gr. lxxii
(gr. iv per teaspoonful)
Sodii bicarbonatis . gr. xlviii
(gr. 2⅔ per teaspoonful)
Ammonii chloridi...gr. xxiv
(gr. 1⅓ per teaspoonful)
Aquæ chloroformi.. ℥i
Aquæ anisi, q.s. ad. ℥iii
M. Sig.—One to four teaspoonfuls, according to age, in a little hot milk, every four hours. Add to each dose pot. iodidi, gr. ss+, if the first prescription is not effectual.

For cardiac weakness administer digitalis (*q.v.*)

To relax spasm of the glottis, immerse the hands in cold water; if this fails, perform intubation (see under Diphtheria).

For debility and anæmia, prescribe cod-liver oil, iron, and arsenic (see Part 11).

The value of vaccine therapy (*q.v.* in Part 11) is doubtful.

The patient should be isolated until the spasmodic stage is over; that is, until the whoop has gone. The catarrhal stage is the most infective or contagious.

Winckel's Disease.—See Epidemic Hæmoglobinuria.

Wool-Sorter's Disease.—See Anthrax, in Part 5, Skin Diseases.

Word-Blindness.—See Aphasia.

Word-Deafness.—See Aphasia.

Worms.—

Dibothriocephalus latus. See Tapeworm Infection.

Eel-Worm. See Ascariasis.

Filaria sanguinis hominis. See Filariasis.

Fluke-Worm. See Distomiasis.

Guinea-Worm. See Dracontiasis, in Part 5, Skin Diseases.

Hook-Worm. See Ankylostomiasis.

Medina-Worm. See Dracontiasis, in Part 5, Skin Diseases.

Pin-, Thread-, or Seat-Worm. See Oxyuriasis.

Round-Worm. See Ascariasis.

Stronglyloides Intestinalis. See Strongyloidosis.

Tape-Worms. See Tapeworm Infection.

Whip-worm. See Trichuriasis.

In searching the stools for ova, proceed as follows: mix about 2 gm. of the fæces with 5 c.c. of a 2 per cent. aqueous solution of liq. cresolis comp. in a centrifuge tube, and centrifuge at high speed for one minute; decant the supernatant fluid, and add fresh liq. cres. comp., mix and centrifuge as before. Repeat this three times. Then place on a clean slide by means of a pipette a little of the sediment, and mix with it a small drop of aniline gentian violet, and cover with a cover-glass. Everything on the slide is stained violet except the eggs. (Fauntleroy and Hayden.) The stool may first be strained through gauze.

Wounds.—The modern treatment of wounds learned in the late World War is as follows: If the wound is seen within eight hours of its reception (some say fifteen and even twenty-four hours), and it is an open wound (not a small, clean, bullet wound), favorably situated, not too extensive, and the patient's pulse not over 120, the wound should be thoroughly cleansed with green soap and hot water, laid wide open, the tract of the wound including all devitalized tissue exsected, all foreign matter and completely detached bone-splinters removed (leaving attached bone fragments sacredly alone), injured bone curetted and united, if necessary, all bleeders tied, the wound thoroughly cleansed mechanically with hot water (swabbed with tincture of iodine if not very large), then closed (primary suture); or else covered with sterile gauze until the bacterial count shows no more than one microbe to five fields, when it may be safely closed (delayed primary or early secondary suture). Suture may be delayed, according to Duval, for eight days. Excision of skin should be as limited as possible, only a very thin paring of the edge of the wound; but any and all muscle tissue that does not contract or bleed should be excised. Before attempts at extracting projectiles they should be located by means of radiography (*q.v.*). After suture, the parts are demobilized. The stitches are removed at the end of twelve to fourteen days.

If the wound is not seen before the lapse of fifteen to twenty hours, or if it is infected, or unfavorably situated, or very extensive, or the condition of the patient is bad, *e.g.*, pulse over 120, employ the Carrel-Dakin treatment, followed by secondary suture when but two or three bacteria may be found per field in ten fields for three days. The Carrel-Dakin treatment is as follows: Thoroughly cleanse the wound mechanically with green soap and hot water, open all pockets, remove all foreign matter and as much devitalized and infected tissue as is feasible, and tie off all bleeders with linen. Aim to procure a basin-shaped wound; counter drainage or dependent drainage is to be avoided. Insert perforated tubes, closed at the end, into all parts of the wound. Use no lateral perforations in penetrating or through-and-through wounds. In the latter instances insert the tubes from below. Keep the tubes in place with pieces of gauze. Protect the skin with sterilized vaseline, poured, while melted, on strips of gauze. Apply over the tubes and gauze non-absorbent cotton, then absorbent cotton, and then gauze and adhesive strips. The rubber tubes may be connected by means of glass Y-shaped and other shaped tubes and the whole connected with a reservoir containing Dakin's solution (see Part 11). The latter should be instilled every two hours, just enough each time to fill the cavity. Change the dressing every day and irrigate the wound with Dakin's solution. The skin should be cleansed every other day with soap and water, shaved, dried, and bathed with ether (not alcohol). The limb,

during sterilization of infected wounds, is immobilized on a splint.

The chief use of Dakin's solution is as a solvent of dead tissue. If all devitalized tissue can be removed with the knife, and primary suture is not feasible, it is, perhaps, better to use dichloramine-T—(see Part 11) than Dakin's solution.

The causes of a continued high bacteria count are the presence of necrotic tissue, poor blood sypply (due to tension from sutures or the pressure of splints), inadequate strength of antiseptic, and improper application of the antiseptic. Dakin's solution must be renewed every two hours because of its chemical instability, its chlorine uniting with the proteins of dead tissue to form chloramines.

After sterilizaton, the wound may be closed by deep sutures in layers or by means of adhesive plaster strapping, without refreshing or removing granulating surfaces. The skin may have to be released from the deeper parts, if adherent, and its edges freshened. Divided muscles, tendons, aponeuroses, and nerves should be brought together. Osseous gaps may have to be filled with Beck's paste (*q.v.* in Part 11) or an adipose graft. When the wound gapes to such an extent as to preclude complete closure, lay a strip of adhesive plaster, three inches wide, fitted with shoe-lace hooks, on each side of the wound, parallel with it, and extending two inches beyond the extremities of the wound, and connect the strips across the wound by means of elastic lacing. To prevent retraction of the soft parts in an infected stump, employ traction by means of adhesive plaster and a weight.

In 90 per cent. of cases, says Carrel, the wound may be closed, following disinfection, between the fifth and twentieth day.

Rutherford Morison, after removal of all necrotic tissue, blood, secretions, etc., dries the wound with alcohol, and then rubs in his "bipp" (*q.v.* in Part 11), and closes the wound. This method has many advocates. Alcohol 50 per cent., is itself a valuable, non-irritating antiseptic. Ether is also used.

Joint wounds are treated exactly as wounds elsewhere. In open wounds of the joint the latter should be laid wide open, the tract of the wound excised, all foreign matter and completely detached bone-splinters, removed, injured bone curetted and rectified, if necessary, and the wound closed (carefully suturing the synovial membrane with fine catgut), followed by a compressive bandage. If drainage for twenty-four hours is deemed advisable, insert the drain down to the synovial membrane, and not into the joint cavity. For knee cases use subsequently a Thomas splint (*q.v.* in Orthopædics, Part 10) with the knee slightly flexed. Resection of the joint is permissible only in the presence of great bone destruction. In the presence of serious suppurative infection, lay the joint wide open and employ disinfection. If this fails, resect the joint, followed at once by separation of the ends of the bones.

Small through and through bullet wounds with punctiform orifice and no fracture should be treated expectantly, unless sepsis occurs, when the joint should be widely opened and the Carrel-Dakin technique employed.

In hemarthrosis with a small external wound, tap the joint if the effusion is considerable and causes pain. If aspiration is prevented by clotting, the joint may be opened, the clot washed out, the tract of the wound excised if it is in the line of incision, otherwise superficially sterilized, and the joint then closed without drainage. Following joint injuries and infection it has been customary to immobilize the joint, but C. Willems advocates immediate active mobilization following either injury or infection. He says the movements must be performed by the patient himself, they must be to their maximum limit, and must not be combined with passive motion. They must be repeated at least every three hours, each time until no more pus or secretion is observed to exude. The patient should be gotten out of bed early.

In the presence of any lesion which threatens ankylosis, and after joint excision (which should be strictly avoided if at all possible), see that the joint becomes ankylosed in a favorable functional position, *e.g.*, (1) the shoulder abducted 50-70 degrees, the elbow slightly in front of the coronal plane of the body; (2) the elbow at a little less than a right-angle, and supinated nearly two-thirds; (3) the wrist in dorsiflexion; (4) the hip in slight abduction and external rotation and full extension; (5) the knee in full extension; (6) the ankle at right-angles and very slightly varoid (Sir Robert Jones).

Sir Robert Jones gives the following advice concerning the management of stiff joints following gunshot injury: If, on mobilizing the joint under an anæsthetic, one or two definite snaps are felt, the stiffness was due to a few fibrous bands about the capsule. If, however, no great resistance to movement is felt, but there is a "soft tearing sensation," it indicates the presence all through the joint of a "diffuse soft fibrous tissue," the disturbance of which will provoke the formation of a "more dense fibrosis." In such a case one should wait until the "pathologic changes are

ended," when "movement may be restored in gentle stages of persuasively conducted alternate attack and rest." Muscular cicatrization may cause restriction of joint motion. In such a case the limb should be splinted so as to relax the affected muscle, and the scar in the latter should be massaged until it loosens up.

In muscle injuries, as soon as healing has occurred, one should start voluntary movements of the affected muscles (not necessarily of the limb), in order to prevent contracture or overstretching.

Divided nerves are sutured primarily or secondarily, as indicated, after freshening the severed ends. After nerve injuries, the muscles supplied must be kept continuously relaxed by splinting the limb until the nerve has regenerated, when voluntary action should be begun.

Contusion of blood-vessels is manifested by thrombosis with subsequent embolism or secondary hemorrhage. The vessel should be ligated above and below the thrombus. Arteriotomy and evacuation of the clot should not be done. In all cases of secondary hemorrhage ligate above and below the bleeding point.

In traumatic aneurysm, lay open the sac, after securing provisional hæmostasis, search for the point of injury, and ligate the vessel immediately above and below this point in order not to occlude important collateral branches; then remove the sac either completely or partially. Suture of the injured vascular walls is the ideal procedure, but it is rarely practicable.

In open destructive wounds of the thorax and lungs, spread the ribs apart with strong rib-retractors, insert the hand, remove foreign bodies, deliver the injured lung, excise injured tissue, suture the lung and close the wound. Treat wounds of the soft parts and fractured ribs as usual. An open thorax should be closed promptly by plugging or suture.

In closed wounds of the chest, thoracotomy and lung suture for the control of hemorrhage is rarely required. Do not aspirate unless symptoms of compression demand it; then it is best to replace the evacuated blood with air or oxygen in order to keep the lung collapsed until hemorrhage is controlled. Should hæmothorax persist after bleeding has ceased, aspirate repeatedly in order to facilitate expansion of the lung. Should infection occur, thoracotomy is indicated.

Operate upon all abdominal wounds except those limited to the liver or kidney in which hemorrhage is not severe.

For intraperitoneal bladder wounds, perform laparotomy and suture the wound. Suture extraperitoneal and supra-pubic wounds. In inaccessible wounds of the walls or base of the bladder, treat the wound tract and drain the bladder through the wound, later tying a catheter into the urethra, if necessary, to favor closure of the urinary fistula. Perform cystotomy in the presence of retention, perivesical infiltration, serious hematuria, foreign body, and secondary systitis (see also Part 3).

For intraperitoneal wounds of the rectum, perform laparotomy and suture the wound. For extraperitoneal wounds, lay open the wound, treat as usual, and plug. Rupture with extensive detachment may require posterior rectotomy. Colostomy is rarely required.

In recto-vesical wounds, treat, as a rule, only the wound tract. To favor closure of the fistula, employ ventral decubitus, or micturition in the knee-chest posture, or tying of a catheter into the urethra.

Punctiform wounds of the spinal cord should be treated expectantly; other wounds in the usual manner (see Part 10).

In wounds of the brain, do not use mallet and chisel to enlarge the bone wounds, but use gouge-forceps or trephine. Do not disturb the dura mater if it is intact. Use warm saline irrigation for the removal of clots, etc.

Wounds of the larynx demand, with rare exceptions, immediate high tracheotomy (*q.v.*) under local anæsthesia (*q.v.*), and the insertion of a tube, with the neck wound left open. Never do a laryngotomy. A proper sized tube should be used, and it should be kept free from secretions by suction (*e.g.*, a Wappler small suction pump). The outer tube should be removed only by the surgeon, and tracheal dilators should be kept at the bedside, to open the trachea in a hurry so that the tube can be quickly reintroduced, if necessary. (Consult also Inflammation, Local.)

Wright's Hypertonic Solution.—See Part 11, Drugs.

Writer's Cramp.—See Cramps, Professional.

Wryneck.—See Torticollis.

Xerostomia.—See Aptyalism.

X-Rays.—See Röntgenology.

Yaws; Frambesia.—See Part 5, Skin Diseases.

Yellow Atrophy of the Liver, Acute.—See Atrophy, Acute Yellow, of the Liver.

Yellow Fever.—An acute infectious, noncontagious disease, endemic in tropical and subtropical countries, and occasionally carried to other parts in warm weather, due to the leptospira icteroides (Noguchi) transmitted by the bite of the stegomyia fasciata mosquito, and characterized by the following

symptoms: The onset is usually sudden, with headache, general pains, sore throat, flushed face, perhaps ocular injection and photophobia, fever, perhaps chilly sensations, usually nausea and vomiting, perhaps epigastric distress. On the second day the fever and pains may or may not abate, but a slight yellow tinging of the conjunctivæ appears, with usually "exquisite tenderness"on gentle deep pressure over the epigastrium. On the third day, as a rule, the fever rises to 103° to 104° F., and remains so for one, two, or three days, and gradually falls to normal. After an intermission of one, two, or three days, the temperature again rises, except in mild cases, but the pulse at the same time slows (Faget's sign). By the fifth or sixth day, the jaundice is intense, the patient is prostrated, and in severe cases there occur hemorrhages from the mucous membranes (black vomit) and nephritis. Albuminŭria, indeed, appears early in all cases, but it may be transient. After lasting one, two, or three days, unless death occurs, the secondary fever gradually subsides.

The liver seems to bear the brunt of the attack; the liver cells undergo fatty degeneration and swell, obstructing the bile-ducts and portal circulation.

The mortality is about 15 per cent., more or less.

Exclude malaria, typhoid fever, dengue, and relapsing fever.

The mosquito which has bitten a yellow fever patient (it must bite the latter during the first three days of the disease) cannot transmit the disease until twelve or more days have elapsed. After this period, however, it is infective as long as it lives. The incubation period, following the bite of the infected mosquito, is two to six days; and the total incubation period would, therefore, be twelve plus two to six days, or fourteen to eighteen days.

Treatment.—Absolute rest in bed, including the use of the bed-pan, urinal, and goose-neck feeder, is to be enjoined. The treatment is eliminative; the more urine passed the better the outlook. Open the bowels thoroughly by means of calomel in divided doses, followed by salines (see Part 11), and if necessary, enemata; and administer water in abundance: cream of tartar lemonade (*q.v.* Vichy; Apollinaris; sodium or potassium bicarbonate, one teaspoonful to the quart; pot. bicarb., gr. xxx to the dessertspoonful of fresh strained lime-juice, every two hours (Anderson); normal saline solution per rectum or subcutaneously every six to eight hours, if fluids are not retained by the stomach. For the treatment of vomiting, see Vomiting. During the first six or seven days, give milk and Vichy or lime water, equal parts—about one tablespoonful every three of four hours, and also barley water (or give no food at all for the first three to five days). Later give milk, broths, ice-cream, custard, gelatine; and after the temperature has been normal for three or four days, light soft or solid diet, gradually increased to regular diet.

For temperature of 102°+F., employ cold sponges or packs every two hours to every half hour, according to the height of the fever.

For a feeble rapid pulse, give strychnine hypodermically, and iced champagne, 2 to 3 teaspoonfuls every two to four hours.

For headache, apply an ice-cap to the head.

Should the urine become scanty and albuminous, resort at once to sweating (by means of hot bricks covered with wet towels sprinkled with alcohol), hot applications, or dry or wet cups (see Cupping) over the kidneys, hot enemata, copious hot drinks, perhaps normal saline infusions, and cathartics (see Uræmia).

For the "black vomit," see Hæmatemesis.

Keep the patient in bed for at least a week after defervescence, and until the urine is clear, feeding him carefully.

Prophylaxis.—On the first appearance of yellow fever the patient should be screened against mosquitoes, and the whole house fumigated with sulphur, two pounds to each thousand cubic feet, for one and one-half hours, to destroy all mosquitoes.

Standing water which may serve as a breeding place for mosquitoes should be removed, or screened, or covered with petroleum. All cans, broken bottles, and rubbish which might collect water, should be removed, sagging gutters straightened. Rain-barrels, small ponds, etc., should be oiled.

Carroll says, since the stegomyia mosquito feeds, as a rule before 9 A. M. and after 3 P. M., non-immunes may go about between these hours, but should protect themselves with mosquito netting at other times, or go to higher altitudes. One-quarter of a mile from shore is a safe distance to anchor to avoid mosquitoes. Ships from infected ports should be quarantined for six days from the day they left port. Ships arriving at infected ports should be anchored 200 meters away from wharves and should be fumigated before taking on cargo or passengers.

Zoster.—(See Herpes Zoster, in Part 5, Skin Diseases).

APPENDIX TO PART I

Schema for the General History and Examination

No.

Name *Address* *Date*

Single *Married*, how long *Occupation*

Children *Widowed*, how long *Sex* *Age* *Race*

General appearance

Height *Weight*

Proper weight (see Food Values)

Hygiene: Rest Exercise

Recreation Diet Sleep

Bowels Ventilation Baths

Sexual habits Tea and coffee

Narcotics Alcohol Tobacco

Complaint: (For what form of distress does the patient seek relief?)

History of Present Illness: Date of onset Duration To what does the patient attribute his or her illness?

Initial Symptoms and Mode of Onset

Progress of the Illness

Is the patient getting better or worse?

Previous History

Family History

Examination: (The rise in pulse rate which occurs when one stands after lying recumbent averages in normal individuals seven; it should not exceed twenty beats per minute).

Temperature	Pulse	Respiration	Facies
Skin and mucous membranes		Glands (lymphatic, salivary, thyroid)	
Head	Eyes	Ears	
Nose	Mouth	Pharynx	
Larynx	Neck	Thorax	
Arms and hands	Back	Lungs	
Heart	Abdomen	Rectum and anus	
Genito-urinary system	Neuro-muscular system	Legs and feet	
Joints	Reflexes	Blood (see Blood Exam.)	
Blood-vessels	Urinary analysis (*q.v.*)	Amount in 24 hours	
	Frequency Color	Reaction	S. G.
	Total solids Urea	Albumin	Sugar
	Sediment	Renal Function	

Diagnosis:

Treatment: (On other side of sheet). (Including dates and whether at office or home).

The Infant Record Chart

Date *No.*

Name *Residence*

Sex *Age* *Birth-weight*

History of Previous Children:

Living

Dead

Health of Mother

Health of Father

Complaint

Duration of Illness

Food given

Intervals of nursing

Number of nursings in 24 hours

Amount taken at each nursing

Amount taken in 24 hours

Number of stools in 24 hours

Character of the stools: Size Color Consistency

Odor Reaction Mucus Curds

Blood

Cathartics employed–

Vomiting, and when occurring

Appetite

Sleep in 24 hours: (The normal is 20 hours up to the sixth month, 16 to 18 hours thereafter).

Weight	Color	Skin
Mouth	Heart	Lungs
Abdomen	Temperature	Rickets?

Diagnosis

Treatment (including dates, and whether at office or home).

Schema for the Neurological History and Examination

No.

Name *Address* *Date*

Single *Married*, how long *Widowed*, how long *Occupation*

Children *Sex* *Age* *Race*

General appearance

Height *Weight*

Proper weight (see under Food Values)

Hygiene: Rest Exercise
Recreation Diet Sleep
Bowels Ventilation Baths
Sexual habits Tea and coffee Narcotics
Alcohol Tobacco

Complaint

History of Present Illness (date and mode of onset and course):

Previous History

Family History

Status Præsens

Appearance	Station or posture	Gait (*q.v.* in Part 1)
Motility or muscular power	Coördination	Vision, pupils and ophthalmoscopic appearances (see Part 6)
Hearing (see Tests in Part 7)	Taste (see Part 9)	Smell (see Part 8)
Cranial nerves (*q.v.* in Part 1)	Spinal nerves (*q.v.* in Part 1)	Reflexes, superficial and deep (see under Brain and Spinal Cord Localization)
Speech (*q.v.* in Part 1)	Touch	Pain sense
Temperature sense	Muscle sense	Sphincter disturbances
Orientation	Trophic disorders (bullæ; herpes; acne; eczema; dry, thin, smooth, glossy skin; hard, thick skin; defective nails; hyperidrosis; hypertrichosis; alopecia)	
Emotional state	Intelligence	Other organs

Diagnosis

Treatment (including dates, and whether at office or home)

The Armamentarium of the Internist.

I. Office Diagnostic Equipment.—Card index; weighing machine; baby scale; Nicholson's or Mercer's type of Riva-Rocci sphygmomanometer; sphygmograph (for recording the time relations of the pulse waves, not the shape); steel spring binaural stethoscope with flexible rubber tubing; Bowles' stethoscope with hard rubber bell attached; hypodermic syringe, accurately graduated; clinical thermometer; aspirating needles; large hypodermic syringe for exploring the pleural cavity for pus; sigmoidoscope; proctoscope; pneumatic sigmoidoscope; the special table of Mathew and Hanes for proctoscopic examination in the inverted position; stomach tube; Rehfuss' stomach tube; 10 c.c. Luer syringe; Einhorn duodenal tube; X-ray machine; ophthalmometer; self-registering perimeter for measuring the visual and color fields; tuning-fork; polygraph; electrocardiograph; inverted cone-shaped glasses for inspection of urine and sputum; urethral sounds; cystoscope and ureteral catheters.

II. Laboratory Equipment.—(a) Instruments and Utensils.—Purdy's electrical centrifuge with test-tubes graduated to 15 c.c.; filter-paper; glass funnels and stand; Boas bulb, or Turck's aspiration apparatus; urinometer and cylinder for the estimation of specific gravity; Doremus or Doremus-Hinds ureometer; test-tubes and rack; two burettes of 50 c.c. capacity; two Esbach tubes; pipettes; evaporation dishes; water-bath; platinum foil; litre-volumetric flask; the Dubosc or the Rowntree and Geraghty modification of the Autenrieth-Königsberger colorimeter; Rudolf's apparatus for estimating the coagulation time of the blood; Sahli's hæmometer, or the hæmometer of Fleischl-Miescher; hæmocytometer of Thoma-Zeiss, consisting of erythrocyte and leucocyte pipettes, counting chamber, and special cover-glass (preferably a Türck counting chamber); slides and cover-glasses; microscope with accessories, including an ultra-condenser or dark-field illuminator; Ehrlich's locking or crosspoint forceps; pinch forceps; Strauss's spinalpuncture needle with mercury manometer attachment; acidosis outfit, consisting of: a hot water bag of about 1500 c.c. capacity with a perforated rubber stopper containing a short glass tube, ⅜ inch in internal diameter, and connected by means of a short rubber tube with a glass mouth-piece, 1½ inches long and ⅜ inch in internal diameter, atomizer bulb, pinch-cock, and the following, obtainable from Hynson, Westcott, and Dunning, Baltimore—eight standardized phosphate tubes, standard bicarbonate solution, test-tubes, glass pipette drawn out to a capillary point, box for color comparison, paraffined stoppers; Babcock's graduated flasks and pipettes for the Babcock test for fat in milk; water-still; alcohol burner or Bunsen burner; tripod, asbestos mats; litmus paper, red and blue; white porcelain dish; Cohnheim's separating funnel; set of beakers; medicine droppers; bath thermometer; separating funnel graduated up to 25 c.c.; cylinder graduated up to 100 c.c.; glass tubing; spectroscope; hand lens; hydrogensulphide generator for the detection of lead; Einhorn's saccharimeter; polariscope; Tallquist's scale; platinum loop; Cornet's forceps.

Utensils for the modification of cow's milk: 16-ounce glass graduate; glass funnel; Chapin 1-ounce dipper; 2-quart mixing pitcher; new aluminum or enamel saucepan; graduated cylindrical nursing bottles with wide mouths; wire bottle-rack; rubber nipples; bottle brushes; cotton-wool; Freeman pasteurizer.

Epstein's instrument for the Lewis and Benedict blood-sugar test, obtained from Ernst Leitz, 30 East 18th Street, New York City.

The Fredericia instrument for ascertaining the carbon dioxide tension of the alveolar air and the Van Slyke instrument for ascertaining the carbon dioxide capacity of the blood plasma, obtainable from the Emil Greiner Company, 55 Fulton Street, New York City.

(b) Chemicals.—10 per cent. sulphuric acid in 95 per cent. alcohol; 50 per cent. solution of antiformin (10 per cent. solution of sodium hypochlorite containing 5 to 10 per cent. of sodium hydrate); ethyl alcohol; chloroform; carbolic acid; pure methyl alcohol; distilled water; potassium carbonate; Giemsa's stain; saturated alcoholic solution of rose-aniline violet; Loeffler's methylene blue solution; nitric acid, c.p.; 5 per cent. solution of silver nitrate; acetic acid; bromine; 8, 10, 20 and 25 per cent. solutions of sodium hydrate; 1 per cent alcoholic solution of phenolphthalein; tenth normal sodium hydroxide solution; formalin; hydrochloric acid, c.p.; solid sulpho-salicylic acid; sodium or potassium citrate; crystallized sodium carbonate; copper sulphate crystals, c.p.; silver nitrate, pure anhydrous crystals; solid potassium hydroxide; 10 per cent. solution of salicyl aldehyde in absolute alcohol; para-amido-acetophenon; sodium nitrite; concentrated ammonium hydroxide; hydrogen peroxide; glacial acetic acid; osmic acid; Sudan III; phenolsulphonephthalein (0.6 gm.); sodium chloride, 0.75 per cent.

solution; thionin (Lauth's violet), a saturated solution in 50 per cent. alcohol; 0.25 per cent. solution of formalin in 95 per cent. alcohol; Canada balsam; corrosive sublimate; sodium sulphate; sodium chloride; neutral glycerine; methyl violet 5B; gentian violet; ether; 0.5 per cent. solution of Grübler's "French pure" eosin in 70 per cent. alcohol; 0.25 per cent. aqueous solution of methylene blue (B.pat.); polychrome methylene blue; liquor plumbi subacetatis; sodium sulphide; phosphotungstic acid; Günzberg's solution (phloroglucin, gr. xxx, vanillin, gr. xv, alcohol ℥i); eosin-hæmatoxylin stain; Gram's stain ingredients (saturated aniline water, filtered; saturated alcoholic solution of gentian violet; iodine; potassium iodide; alcohol, 95 per cent.; safranin); ferric chloride solution, 10 per cent. (liquor ferri chloridi); dimethylamidoazobenzol, 0.5 per cent. alcoholic solution; alizarin (sodium alizarin sulphonate), 1 per cent. aqueous solution; calcium chloride, 1 per cent. aqueous solution; pure benzidin; hydrogen peroxide, 3 per cent.; saturated alcoholic solution of fuchsin; carbolic acid solution, 5 per cent.; spirits of nitrous ether; potassium ferrocyanide, 10 per cent.; dilute acetic acid; picric acid; citric acid; sulphuric acid, c.p.; amyl alcohol; Rochelle salt; caustic soda; bismuth subnitrate; phenylhydrazine hydrochloride; sodium acetate; ferric chloride; potassium or sodium nitroprusside; barium sulphate; Wright's stain; powdered charcoal, magnesium oxide or carbonate, barium carbonate, silicic acid, sawdust, or lime water, for clarifying urine; acetic acid, 5 per cent.; acetic acid, 50 per cent.; alcohol, 60 per cent.; phloridzin; indigo carmine.

III. Therapeutic Equipment.—Aspirating needles; Southey's or Curschmann's tubes; rubber tubing; wet-cup instrument, consisting of lancet blades on a spring; gasogen (containing oxylith, Na_2O_3, or sodium perborate, brought in contact with water, and the resulting gas stored in a 15-litre gasbag); Davidson double-bulb syringe; 1 c.c. "Record" syringe; O'Dwyer's intubation set; tracheotomy instruments (knife, artery clamps, sharp hook, small-toothed dissecting forceps, Trousseau's three-bladed dilator; tracheotomy tube, tapes, horsehair or silkworm-gut sutures, sterile gauze; probe-pointed bistoury, retractors); chloroform mask; œsophageal bougies; Waldenberg's portable apparatus for the inspiration of compressed air and its expiration into rarified air, used in the treatment of pulmonary emphysema; Strauss' spinal-puncture needle with mercury manometer attachment; pile ointment pipe; rubber catheter, No. 12 to 16 American scale, or 24 French; No. 18 American catheter; electricity (galvanic, faradic, sinusoidal, static, high-frequency); vibrassage machine; fountain syringe; basins; hot water bags; ice caps; stomach tube; colon tube; hypodermic syringe; Paquelin cautery; electro-cautery; douche-pan; Leiter coil; catheters, male (Nélaton) and female; larnygeal lancet; laryngeal mirror; head lamp; Kemp's, Tuttle's, or Martin's double-current rectal tubes; intravenous infusion apparatus, consisting of a special needle, rubber tube, glass observation tube, and glass reservoir, etc. (see Intravenous Medication); adhesive plaster; set of abdominal trocars and cannulæ; oxygen cylinder with "pressure" tubing; Holt croup kettle, or tripod, saucepan, and alcohol lamp; corrugated applicators; oil and water atomizers; piston syringe; graduated flexible linen or gum-elastic or whalebone œsophageal sounds with conical tips; filiform whalebone œsophageal bougies; œsophagoscope; dressing forceps; Symond's œsophageal tube; plaster of Paris and plaster bandages; Bier's suction cups; Potain's air-tight, thoracentesis apparatus with thick, uncollapsible rubber tubing and trocars with lateral outlet; Wolff's bottles; Mohr's nose protector; fenestrated anal and rectal speculum; medicine droppers; Breck feeder; dry hot air apparatus with gasoline attachment; blood transfusion outfit (see Blood Transfusion); artificial pneumothorax apparatus (see Artificial Pneumothorax); 32-candle-power electric light in a large parabolic reflector; Klapp's suction bell; splint wood; ionic medication outfit (galvanic battery, with the conducting cords preferably of flexible stranded copper wire, insulated with india rubber; metal disc—say aluminum—electrode, about two inches in diameter, pierced with small holes around its margin, through which three layers of thick felt may be attached with thread, the first layer of felt larger than the metal disc and each succeeding layer larger than the preceding, the felt before using being well soaked in hot ammonia or soda water in order to dissolve out all grease; metal rod or button electrodes; metal sound electrodes; needle electrodes, preferably zinc); Bruning's and von Schroetter's tracheal and bronchial intubation tubes; a number of small, wide-mouthed, glass-stoppered bottles, and three glass pipettes, one holding $\frac{1}{10}$ c.c. graduated into hundredths of a cubic centimeter, the second holding one cubic centimeter graduated into tenths of a cubic centimeter, and the

third holding ten c.c. graduated into tenths of a c.c., for making tuberculin dilutions; a Randall-Faichney or a Burroughs-Wellcome glass syringe of one-half or one c.c. capacity, graduated into hundredths of a c.c., for tuberculin injections; electric pad or electrotherm; four-ounce bulb syringe; vulcanite plug with narrow anal stem and perineal bar, supported by a pad and T-bandage for prolapsus ani vel recti; cystoscope; ureteral catheters and bougies; No. 5 French renal catheter, for irrigation of the renal pelvis; two-way glass syringe of 15 c.c. capacity; Wales soft flexible bougies for rectal stricture; goose-neck feeding cup; long intubation tubes to pass mediastinal obstruction of the trachea; bronchoscope; long tracheal cannula; cupping glasses; artificial leech; diverticulum sound; œsophageal dilators; William Hill's styleted oro-œsophago-gastric intubation tube; laryngeal applicators; intratracheal syringe for the injection of medicated oil; Seigle's steam-spray producer; nebulizers; oronasal respirators; graduated sounds for bronchial cicatricial stenosis, used through a tracheotomy wound; Sippy's inflatable rubber bag for dilating œsophageal stricture; Quincke's lumbar puncture needle; rubber bag rectal stricture dilator; glass syringes for the injection of Beck's bismuth paste.

The General Surgeon's Equipment.—Large fenestrated rubber drainage tubes; gutta-percha tissue; Wilson's empyema drainage tube; large hypodermic syringe for exploring the pleural cavity for pus; sterile absorbent cotton-wool; scalpels; artery forceps; rib-bone forceps; raspatory; sigmoidoscope; proctoscope; pneumatic sigmoidoscope; grooved director; scissors; sharp-pointed, curved bistoury; probe-pointed scissors; Gant's angular director for fistula in ano operations; bandages; sterile gauze bandages; plain gauze; iodine gauze, and iodoform gauze; tongue forceps; 25-yard spool of braided surgical silk thread No. 8; dressing forceps; cold snare; trephines and burrs; chisels and gouges; mallets; Bier's vacuum or suction cups; collodion; large metal fountain syringe; linen thread; hemorrhoidal clamp; Martin rubber band; splint wood; rigid drainage tube with rubber collar, for pneumothorax; olive-shaped, hard rubber anal dilators of various sizes; Hirschmann dilator for rectal stricture; Wales soft flexible bougies for rectal stricture; rubber bag rectal stricture dilator; blunt hook; Gant's clamps or Pennington's clips, or Lynch's electric angiotribe for division of hypertrophied rectal valves; four-ounce bulb syringe, thumb forceps; long rat-toothed dissecting forceps; needle-holder; needles, assorted varieties and sizes; pedicle needle, tissue clamps, straight and curved; abdominal retractors; long nozzle drainage syringe; glass and rubber drainage tubes; Moynihan's intestinal clamps; Murphy's buttons; large glass trocars and tubing for tapping cysts; small metal trocars; infusion apparatus; adenoid curettes; tonsil knives; probes, snare; two-way rectal tube; tonsil forceps; bone-cutting forceps; bone-grasping forceps; saw; silver and aluminum wire; beef-bone plates and screws; tonsil hæmostat; combined mouth-gag and tongue depressor; abdominal trocars and cannulæ; probang; tonsil scissors; tonsillotomes; tonsil punch; periosteal elevators; curette; rib forceps; bone drill; aneurysm needle; hemorrhoidal clamp; eyelid retractor; nasal speculæ.

Operating table, stands, basins, pitchers, hand brushes, soap, Rochester sterilizer for dressings, instrument sterilizer (fish kettle), operating gowns, caps, nose and mouth protectors, laparotomy sheets, plain sheets, rubber sheets, towels, laparotomy pads with tape attached; rubber gloves, safety pins, Martin india-rubber bandage, adhesive plaster, absorbent cotton, lint, suture material: silk, silkwormgut, plain catgut, chromized catgut, linen thread, horsehair; cautery, razor; Esmarch inhaler.

PART 2

GYNÆCOLOGY

Abortion, Miscarriage, and Premature Labor.—L. *abor'tio*, from *ab*, from + *ori're*, to grow. The term abortion is used arbitrarily to denote the expulsion of the ovum during the first three months of pregnancy, or before the complete development of the placenta. Miscarriage denotes the expulsion of the fœtus during the period between the end of the third month and the end of the seventh month, or from the time of the complete formation of the placenta to the viability of the fœtus. Premature labor denotes the premature termination of pregnancy after the seventh month, when the fœtus is viable, *i.e.*, capable of living outside the uterus.

Symptomatology.—Threatened abortion is manifested by pains in the lower abdomen and back, and uterine hemorrhage. Abortion is imminent when the hemorrhage becomes profuse and the cervix is well dilated. It is inevitable on the escape of the liquor amnii. In the early months of pregnancy, the entire ovum, *e.g.*, fœtus, membranes, and placenta, may be expelled; but after the fourth month, the abortion is usually incomplete, the fœtus being expelled, but the placenta and membranes remaining and producing continued hemorrhage until removed.

Etiology.—Criminal interference; irritable uterus; lacerated cervix; excessive coitus; overexertion; trauma (falls, blows, etc.); strong emotion (anger, grief, fright); breast affections; rapidly succeeding pregnancies; excessive vomiting or coughing; asthma; convulsions, caused by eclampsia, epilepsy, tetany, cholæmia, or hysteria; chorea; very hot climate; very high altitude; salpingitis; appendicitis; tumors; multiple pregnancy; abortifacient drugs, *e.g.*, ergot, cottonroot, quinine, aloes, juniper, black hellebore, tansy, pennyroyal, cantharides; death of the fœtus, due to the following causes: abnormalities of development, uterine displacements, particularly retroflexion and prolapse, endometritus or deciduitis, chronic metritis, syphilis (maternal or paternal), excessive torsion of the cord, stenosis of the umbilical vein, hydramnios, hydatidiform mole, placental disorders (obliterating endarteritis, infarcts, low implantation and placenta prævia, velamentous insertion of the cord, premature separation of the placenta), uterine developmental anomalies, uterine hypoplasia or infantile uterus, myomata, pelvic adhesions, chronic maternal or paternal diseases, *e.g.*, tuberculosis, nephritis, alcoholism, plumbism, diabetes, malaria, cancer, icterus gravidarum, etc., paternal immaturity or senility, obesity, consanguinity between husband and wife, maternal heart, kidney, liver or lung disease, anæmia, plethora, malnutrition, acute infectious diseases, toxæmia, poisoning with lead, arsenic, mercury, phosphorus, carbon monoxide, tobacco, etc., traumatism, strong emotion.

Says Williams: "The most important etiological factors in the interruption of pregnancy in the first four months are endometritis, uterine displacements, and abnormalities in development, while after this period syphilis and Bright's disease play a similar role."

Treatment.—In threatened abortion, put the patient to bed in a quiet, darkened room, and exclude all visitors. Elevate the pelvis and administer morphine, gr. ⅛ to ¼, hypodermically, both as a general and local sedative, followed if necessary every four to six hours, or morning and evening, by rectal suppositories of extract of opium, gr. i; or rectal enemata consisting of tr. opii, ♏x, in starch-water, ℥i–ii. The bromides and chloral (see Part 11) are also serviceable sedatives.

℞ Codeinæ sulphatis..... gr. ss
Extracti hyoscyami..... gr. i
Olei theobromatis..... q.s.
Fiat suppositorium.

Sig.—Insert one every four to six hours.

℞ Sodii bromidi..... ℥ss (gr. xx per dose)
Elixir simplicis..... ℥iii
Tincturæ hyoscyami .... ℥ss (gr. xx per dose) / (♏xx per dose)

M. Sig.—Two teaspoonfuls in a wine glass of water every three hours.

Keep the patient in bed for at least a week after the disappearance of all symptoms.

Should the hemorrhage continue, however, or should it at any time become profuse, pack the vagina tightly with sterile

gauze bandage through a Sims speculum, and after twelve to twenty-four hours, proceed as follows: Shave and cleanse the external genitalia and neighboring skin thoroughly with castile or green soap and warm water, remove the vaginal packing, and cleanse the vagina with soap and water, followed by bichloride solution, 1 : 4000. Cover the lower limbs and abdomen with sterile sheets, exposing only the vulva, and under ether carefully dilate the cervix by means of steel dilators or Hegar's graduated cervical bougies. When the os is sufficiently dilated, insert the finger and peel off the ovum, while the other hand on the abdomen squeezes the uterus and presses on its contents, in an endeavor to express the ovum "as a stone is expressed from a cherry" (Hoennig's method). Or the ovum may be broken up with the finger and removed by the aid, if need be, of ovum or placental forceps, or Emmet's curettement forceps used as placental forceps. If the cervix is so rigid that it cannot be sufficiently dilated to admit the finger, use the sharp curette; but remember that the uterus is sometimes very soft and easily perforated. Williams says: "In my hands vaginal hysterotomy (see Part 4, Obstetrics) has proved a much more satisfactory and less dangerous procedure than forced instrumental dilatation of a rigid cervix." Hysterotomy, however, is contraindicated in the presence of infection, as is also curettage.

After making sure that the uterus is empty, its cavity may be irrigated with hot sterile water by means of a double current irrigator, or with a single tube, if the return flow is free, attached by rubber tubing to a large reservoir, all previously sterilized by boiling. Some do not irrigate.

The after-treatment is the same as that of the normal puerperium. Edgar gives ergotin, gr. i–ii, and strychnine sulphate, gr. $\frac{1}{30}$, t.i.d., in capsule or tablet, to hasten involution. In the presence of infection, the patient should be propped up in a sitting posture to favor drainage, and ergot (*q.v.*), pituitrin (*q.v.*), laxatives, and concentrated nutriment administered. After the uterus has once been emptied, it should be left severely alone.

A. Lipkis praises pituitrin in incomplete abortion; about 0.5 c.c hypodermically every day or two until the placenta is expelled, which, he says, usually occurs in two to three days, rarely five days.

Miscarriage and premature labor are treated the same as labor at term. Do not use the curette to remove an adherent placenta after the twelfth week; remove it manually.

Prophylaxis.—Correct any possible causal factor. If the cause appears to be an irritable uterus, enjoin a quiet life, rest in bed during the time corresponding to the menstrual periods, abstention from sexual intercourse, and the avoidance of drastic purgatives, coughing, or vomiting (give sedatives if required). During the days corresponding to menstruation, a uterine sedative may be given, *e.g.*, hydrastis or pulsatilla (see Part 11).

Abscess, Bartholin's Gland.—L. *abscessus* a going apart; *glans*, a cord. See Vulvitis.

Kidney.—See Pyelonephritis in Part 1.

Ovarian.—L. *ovar'ium*, ovary. See Pelvic Inflammatory Disease.

Pelvic.—L. *pelv'is*, basin. See Pelvic Inflammatory Disease.

Perinephric.—Gr. *περί* around + *νεφρός* kidney. See Perinephric Abscess.

Skene's Glands.—See Gonorrhœa, and Vulvitis.

Suburethral.—L. *sub*, under + Gr. *οὐρήθρα* urethra. See Suburethral Abscess.

Tubal.—L. *túba*, a tube. See Pelvic Inflammatory Disease.

Uterine.—See Uterus, Abscess of the.

Vulvo-Vaginal Glands.—L. *vulv'a*, vulva; *vagiña*, sheath. See Vulvitis.

Adenoma Vesicæ.—Gr. *ἀδήν* gland + *-ωμα* tumor; L. *vesiċa*, bladder. See Tumors of the Bladder.

Adhesions of the Clitoris.—L. *adhæśio*, from *adhær'ere*, to stick to; Gr. *κλειτορίς* clitoris. See Masturbation.

Adhesions, Pelvic.—See Pelvic Inflammatory Disease.

Adnexal Disease.—L. See Pelvic Inflammatory Disease.

Alkalinuria.—Arabic *al-gal*, potash; L. *uriña*, urine. See Part 1.

Amenorrhœa.—Gr. *α* neg. + *μήν* month + *ῥοία* flow. Under this caption are included both absence of menstruation and scanty menstruation.

Etiology.—1. Causes of failure of menstruation to appear at the usual age: Absence of the uterus; failure of its development; imperforate hymen; atresia of the vagina or cervix (congenital or post-inflammatory, *e.g.*, following gonorrhœa or the acute infectious diseases, etc. —See Vulvitis, and Vaginitis). Obstruction of the genital tract produces hæmatocolpos or hæmatometra and hæmatosalpinx.

2. Causes of the cessation of menstruation after it has once appeared: Pregnancy; lactation; menopause; overwork, mental or physical; brain work associated with a sedentary life; bad hygiene; insufficient nourishment; chronic digestive disturbances, especially gastric and duodenal ulcer; anæmia; excessive hemorrhage; neurasthenia; hysteria; emotional states or nervous derangements; masturbation; fear of, expectation of, or longing for pregnancy; emigration; exposure to cold during menstruation; cold vaginal douche; surgical operation; progressive paralysis; infectious diseases (usually temporary amenorrhœa, lasting three to six months or longer); acute diseases of all kinds; exhausting diseases; malignant disease; Addison's disease; leukæmia; tuberculosis; syphilis; malaria; mumps; chronic nephritis; diabetes mellitus and insipidus; exophthalmic goitre; acromegaly and hypopituitarism; obesity; hypothyroidism; myxœdema; uric acid diathesis; chronic poisoning (lead, mercury, morphine, etc.); obstructive lesions, *e.g.*, atresia of the vagina or cervix due to necrosis following difficult labor, burns, cauterization, inflammation, operations, or the use of pessaries; superinvolution or atrophy of the uterus following a severe labor with much hemorrhage, or prolonged lactation, or infection, or exhausting diseases following labor (the condition is diagnosed by means of bimanual palpation, the uterine sound, and the history); endometritis and metritis; sharp curettage of the uterus; atmocausis; pelvic, abdominal, or thoracic disease; microcystic degeneration of the ovaries and other bilateral ovarian cysts and tumors; double ovariotomy.

Treatment.—Correct the cause, if possible. In imperfect development of the sexual organs in which the molimen (periodic headache, dizziness, and flushes [L. for "effort"]) is absent, treatment is of no avail. If the molimen is present, resort to dilatation and curettage of the uterus, followed by a general hygienic regimen, massage, electricity, and emmenagogues (see below). Good hygiene embraces adequate rest and exercise, fresh air day and night, a daily morning warm bath before breakfast, in a warm room, followed by a cold spinal douche and brisk rubbing with a coarse towel, regular hours of eating and sleeping, nutritious food, rest before and after eating, regulation of the bowels, and if deemed useful, tonics, *e.g.*, iron, arsenic, nux vomica (see Part 11.) Local faradism or galvanism may be employed for fifteen to twenty minutes every other day for about six weeks, one electrode being placed on the abdomen over the symphysis pubis and the other over the lumbo-sacral region or in the vagina. Bandler, in employing galvanism, uses a current of 10 to 12 milliampères, with the negative electrode within the uterus; but intrauterine electricity is strongly condemned by others. Additional local stimulative measures include bimanual massage of the uterus, three times a week, very hot vaginal douches twice daily, continued for weeks, scarification of the cervix twice a week and whenever the molimen occurs, with removal of ½ to 1 ounce of blood, warm sitz-baths lasting ten to thirty minutes, hot foot-baths, and frequent sexual intercourse to promote local congestion. These stimulative measures are also recommended for uterine super-involution, but the latter is probably incurable.

For the treatment of imperforate hymen (hæmatocolpos), see Atresia of the Vagina.

In acute suppression of the menstrual flow due to exposure to cold, cold douching, sea bathing, or sudden emotion, put the patient to bed, surround her with hot water bottles, apply mustard (*q.v.*) or hot applications to the hypogastrium and feet, and give hot douches or a hot sitz-bath. Administer a brisk saline cathartic (*q.v.*), followed by Dover's powder in divided doses (*q.v.*). Insert a rectal suppository of extractum opii, gr. i, if the pelvic pains are severe; or inject laudanum, ♏x–xv, in starch water, ʒi–ii, into the rectum. Should menstruation not return the following month, repeat the hot douches, hot abdominal applications, hot foot-baths, and hot sitz-baths, and administer stimulating emmenagogues. Vaginal tampons saturated with ichthyol in glycerine, 25 per cent., and held in place with lamb's-wool, may also be inserted twice weekly. If these measures prove ineffectual, resort to dilatation and curettage. The bromides, valerian, and sumbul, singly or in combination, are recommended for the relief of painful molimina, and also for suppression due to sudden emotion.

For emigration amenorrhœa prescribe a general tonic regimen and stimulating emmenagogues.

Treat obesity as described in Part I, on General Medicine and Surgery. Ovarian extract, thyroid extract, or pituitary extract may be of possible benefit. Hypopituitarism is a cause of amenorrhœa and obesity. After the obesity has been reduced, Ashton advises dilatation and curettage and stimulating emmenagogues.

For the menopause, whether natural or artificial, prescribe ovarian extract, gr. iii–v, t.i.d.

For anæmia prescribe iron, and perhaps arsenic.

Amenorrhœa due to tuberculosis and other nutritional diseases is conservative, and one may look for the reëstablishment of menstruation in such cases only as the general nutrition improves. Local treatment in these cases is obviously contraindicated.

Emmenagogues:

℞ Extracti ovarii, tabellas No. 30, aa gr. v. Sig.—One tablet four times a day. Recommended in obesity, chlorosis, hyperthyroidism, etc.

℞ Corporis lutei, extracti, tabellarum, aa gr. v, No. 60. Sig.—One or two tablets, t.i.d.p.c.

℞ Extracti pituitri exsiccati, gr. ii–iv, aa tabellas 30. Sig.—One tablet t.i.d. For amenorrhœa associated with obesity.

℞ Tabellas thyroideæ glandulæ siccæ, No. 24, aa gr. i. Sig.—One tablet t.i.d.p.c. Perhaps appropriate in obesity.

℞ Apiolis, capsulas No. 20. aa ♏iii–vi. Sig.—One t.i.d.p.c., for one week before the expected flow, to be increased to four capsules in four hours when symptoms of menstruation appear. (Bandler.)

℞ Manganesii binoxidi, pilulas No. 30, aa gr. i–ii–v. Sig.—One pill t.i.d.

℞ Potassii permanganatis, gr. xv–xxx
Petrolati spissi..... gr. lxx
M. et ft. pil. No. 20.
Sig.—One pill three or four times a day, p.c., with a glass of water.

℞ Acidi salicylici..... ʒii (gr. v per dose)
Aquæ, q.s. ad..... ℥iv
M. Sig.—Teaspoonful well diluted in water three or four times a day for a long period. Antirheumatic and stimulant of the pelvic circulation.

℞ Acidi oxalici..... gr. v–xii–xxiv (gr. ⅒–¼–½ per dose)
Syrupi limonis vel aurantii corticis.....ʒii
Aquæ fervidæ, q.s. ad.. ℥viii
M. Sig.—Teaspoonful t.i.d. for three or four months. Especially indicated in psychic conditions, change of residence, etc. (Ashton.) Poulet prescribes 1¼ gr. every hour at the time of the usual menstrual period.

℞ Tincturæ guaiaci ammoniati, ʒii. Sig.—♏x–ʒi in a cupful of water, t.i.d. For amenorrhœa associated with rheumatism.

℞ Fluidextracti Hoang-Nan, ♏v–xxx, in water t.i.d. General tonic in malnutrition and anæmia.

℞ Aloes purificatæ, pilulas No. 10, aa gr. i–vi.
Sig.—One pill t.i.d. or at bedtime, for several days before the expected flow. Produces pelvic congestion (see also Part 11).

℞ Tincturæ ferri chloridi. ʒi (♏xv–xxx per dose)
Glycerini..... ..... ʒi
Syrupi limonis, q.s., ad, ℥iv
M. Sig.—One or two drams in water, t.i.d.p.c. to be taken through a glass tube, followed by rinsing and brushing of the teeth. "Greatly relieves and often cures the vasomotor disturbances following the removal of the uterus and its appendages." (Ashton.) (See Part 11 for other preparations of iron. Iron is indicated in anæmia, hysteria, etc.)

℞ Tincturæ ferri chloridi.... ʒiii (♏xv per dose)
Tincturæ cantharidis..... ʒi (♏v per dose)
Tincturæ aloës..... ℥ss (♏xx per dose)
Tincturæ guaiaci ammoniati..... ℥iss (ʒi per dose)
Syrupi, q.s., ad..... ℥vi
M. Sig.—One tablespoonful in water thrice daily. (Dewees.)

℞ Extracti aloës aqueosi... ʒi (gr. ⅝ per pill)
Ferri sulphatis exsiccati... ʒii (gr. 1⅛ per pill)
Asafœtidæ..... ʒiv (gr. 2⅝ per pill)
M et. ft. pil. no. 100.
Sig.—One to three pills, t.i.d. (Goodell.)

℞ Olei sabinæ, ♏ii–iv, in pill or capsule or on sugar, t.i.d. Causes pelvic congestion.

℞ Fluidextracticimicifugæ, ℥ss in water, t.i.d. In mental depression and psychic disturbances.

℞ Auri et sodii chloridi, pilulæ, gr. ⅕₀–⅒, t.i.d. In neurasthenia and exhausted states.

℞ Hydrargyri chloridi corrosivi..... gr. i (gr. ¼ per dose)
Liquoris arsenici chloridi. ♏xlviii (♏ii per dose)
Tincturæ ferri chloridi,
Acidi hydrochlorici diluti, aa..... ʒiv (♏x per dose)
Syrupi zingiberis, q.s., ad. ℥vi
M. Sig.—One dessertspoonful in water after meals, as a tonic. (Goodell.)

Anal Diseases.—Consult Part 1, General Medicine and Surgery.

Aneurysm of the Renal Artery.—Gr. *ἀνεύρυσμα* a widening; L. *ren*, kidney; *arte'ria* artery. The symptoms are tumor, pain, and hæmaturia. The condition is rarely diagnosed before exploratory operation. The treatment is nephrectomy.

Angioma Urethræ.—Gr. *ἀγγεῖον* vessel + *-ωμα* tumor; *οὐρήθρα* urethra. See Urethral Caruncle.

Angioma Vulvæ.—Consult Tumors of the Vulva.

Angioneurosis of the Kidney.—Gr. *ἀγγεῖον* vessel + *νεῦρον* nerve. See under Hæmaturia.

Anteflexion of the Uterus.—L. *an'te*, before + *flex'io*, bend; *u'terus*, womb. The chief symptoms are dysmenorrhœa, endometritis, and sterility. Exclude myoma in the anterior uterine wall by means of the uterine sound.

Etiology.—Infantile uterus (congenital); unequal growth of the uterine walls; increased weight of the corpus due to the presence of myoma; relatively rapid involution in the anterior wall as compared with

that in the posterior wall, due to inflammation at the site of the posteriorly inserted placenta; "inflammatory thickening of the posterior wall of the uterus and a corresponding atrophy of the anterior wall from prolonged pressure at the angle of flexure"; traction of inflamed utero-sacral ligaments upon the cervix; traction from anterior adhesions; fluid, or tumors, or an inflammatory mass in Douglas's pouch; abnormally soft walls.

Treatment.—First correct any existing metritis or pelvic inflammatory disease (*q.v.*). Forcible dilatation performed one week after menstruation, with curettage and irrigation if endometritis is present, followed by tight packing with a strip of gauze, which is allowed to remain in situ for twenty-four to forty-eight hours, is often of benefit. The patient should be kept in bed for one week after the operation, and in one room two weeks. The operation may have to be repeated several times. Dudley's plastic operation upon the cervix, preceded by dilatation and curettage, is often of value.

For the relief of dysmenorrhœa, the uterine canal may be straightened (during menstruation and in the intervals) by "pushing the cervix upward and backward with the left index-finger, while with the right hand a forward and downward pressure is exerted on the organ." (Author?)

Congenital anteflexion is not curable except by pregnancy.

Antelocation of the Uterus.—L. *an'te*, before + *loca'tio*, placement. The cervix is sometimes found to have dropped back toward the hollow of the sacrum, and backache and pelvic drag may be complained of. (Hutchins.)

Etiology.—Peritoneal adhesions; contraction of the bladder; distended rectum; post-uterine tumor or hæmatocele. (Dudley.)

Treatment.—Attend to the cause. In post-inflammatory cases, bimanual massage and systematic tamponade of the vagina may restore the uterus to its normal position and mobility (see Pelvic Inflammatory Disease).

Cases designated by Hutchins "anteposed uteri in descensus," in which the cervix has dropped back toward the hollow of the sacrum, he treats by vaginal tampons, so introduced as to lift the uterus as a whole well upward and thus relieve the drag on the cervix. When this is attained, he opens the abdomen and suspends the uterus.

Anteversion of the Uterus.—L. *an'te*, before + *vers'io*, a turning. **Etiology.**—Congenital anomaly; traction from anterior adhesions drawing the corpus forward; traction from posterior cervical adhesions or inflamed utero-sacral ligaments drawing the cervix upward; small fibroids in the anterior wall of the uterus; retro-uterine tumors; increased weight of the uterus due to metritis, myoma, etc.

The Symptomatology is that of the associated lesions.

Treatment.—Attend to the cause. For the relief of bladder irritation, try an Albert Smith or Hodge pessary or a flexible rubber ring, for the purpose of lifting the uterus away from the bladder; preceded, if necessary to remove tenderness, by daily supporting tampons of ichthyol and glycerine (25 per cent.) held in place with lamb's-wool (Dudley). An abdominal belt (see Splanchnoptosis in Part 1, on General Medicine and Surgery), may be useful (Ashton). See also the treatment of Ante-location.

Anuria.—Consult Part 1, General Medicine and Surgery.

Aphthous Vaginitis.—Gr. *ἄφθα* a little ulcer; thrush. (See Vaginitis.)

Vulvitis.—See Vulvitis.

Appendages, Uterine, Diseases of the.—L. *appen'dere*, to hang upon. (See Pelvic Inflammatory Disease.)

Armamentarium.—L. See the Appendix.

Arteriosclerosis and Fibrosis Uteri.—Gr. *ἀρτηρία* artery + *σκλήρόσις* hardness; L. *fi'bra*, fibre; *u'terus*, womb. (See Menorrhagia and Metrorrhagia.)

Ascensus Uteri.—L. abnormally high position of the uterus. **Etiology.**—Inflammatory contraction of the utero-sacral ligaments; inflammatory adhesions formed during the presence of the pregnant uterus in the abdomen or upper pelvis; growing pelvic tumor dragging the uterus up with it; pelvic tumor pushing the uterus up; excessive distention of the rectum or bladder; large accumulation of menstrual fluid in the vagina. (Dudley).

Treatment.—Attend to the cause. In post-inflammatory cases, bimanual massage and systematic tamponade of the vagina may restore the uterus to its normal position and mobility (see Pelvic Inflammatory Disease).

Ascent of the Uterus.—See Ascensus Uteri, above.

Atmocausis.—Gr. *ἀτμός* steam + *καῦσις* burning. See under Menorrhagia.

Atony of the Bladder.—Gr. *α* priv. + *τόνος* tone. See Paralysis and Paresis of the Bladder.

Atresia of the Cervix.—Gr. *α* neg. + *τρῆσις* a boring: imperforation; L. *cer'vix*, neck. I. **Congenital Atresia.**—Congenital atresia of the cervix results in an accumulation of menstrual blood in the uterus (hæmatometra),

and possibly in the tubes (hæmatosalpinx). Rupture or suppuration (pyometra) may occur.

TREATMENT.—Under very rigid asepsis, since the tendency to infection in these cases is great, make a free incision at the point of atresia, remove the accumulated material, and irrigate thoroughly with hot sterile boric acid solution, ʒi–v ad Oi. Do not apply pressure from above on the abdomen. Then pack the uterine cavity loosely with plain or iodoform gauze, pack the vagina, draw the urine, and cover the vulva with a pad and T-bandage. Remove the packing after twenty-four to forty-eight hours and douche the vagina daily. Keep the patient in bed one or two weeks. (See Dudley's Gynæcology for plastic operative measures.)

II. Acquired Atresia and Stenosis.—Gr. *στένοσις* narrowing or stricture. Amenorrhœa and sterility are consequences. Hæmatometra, hydrometra, pyometra, or physometra may result. Leucorrhœa and dysmenorrhœa may be present.

Examine with a sound under anæsthesia.

ETIOLOGY.—Sloughing due to labor, or to the application of caustics; inflammation from an ill-fitting pessary; myoma; ulceration or pressure in cancer; ulceration in scarlet fever, diphtheria, smallpox, syphilis, senile endometritis and vaginitis, gonorrhœa, etc.; "too tight closure in the operation for cervical laceration"; displacements, particularly anteflexion. "The pinhole os is usually congenital."

TREATMENT.—The stricture or narrowing is overcome by means of dilators, with the aid of a straight bistoury for the incision of cicatrices and a narrow external os. Dilate the canal up to 1 to 1½ inches, irrigate the uterine cavity with hot normal saline or boric acid solution, ʒi of either to the pint, and pack with gauze. After forty-eight hours, remove the packing, irrigate the vagina, and pack the cervix. Repeat this every other day, keeping the patient in bed one week. In pyometra, irrigate the uterus occasionally if there is elevation of temperature or a foul discharge(?). After one week have the patient employ vaginal douches twice daily for several weeks. Examine the cervical canal every month for several months, and dilate again if the stenosis recurs. (Ashton.)

The pinhole external os, says Dudley, is likely to contract after dilatation and incision, and he therefore prefers Schrœder's operation.

Atresia of the Rectum.—See under Rectal Stricture.

Atresia of the Ureter.—See Hydronephrosis.

Urethra.—See Stricture of the Urethra.

Uterus.—See Atresia of the Cervix.

Atresia of the Vagina.— **Causes.**—Imperforate hymen; necrosis following difficult labor; the use of pessaries; burns; caustics; operations; inflammation (see Vaginitis).

In congenital imperforation of the hymen, the menstrual blood accumulates in the vagina (hæmatocolpos), and possibly in the uterus and tubes (hæmatometra and hæmatosalpinx).

Treatment.—See Dudley's Gynæcology for plastic operative measures. Treat imperforate hymen as follows. Under strict asepsis, since the tendency to infection in these cases is great, make a free crucial incision and wash out all blood from the vagina and uterus with hot concentrated boric acid solution (about a tablespoonful to the pint). Do not apply pressure from above on the abdomen. Then pack the uterine cavity and vagina to the outlet loosely with plain or iodoform gauze, draw the urine, and cover the vulva with a pad and T-bandage. Remove the packing after twenty-four to forty-eight hours and douche the vagina daily. Keep the patient in bed one or two weeks.

Atresia of the Vulva.—See Atresia of the Vagina, above.

Atrophy of the Vulva.—Gr. *α neg.* + *τροφή* nourishment. See Kraurosis Vulvæ.

Backache.—See Part 1, General Medicine and Surgery.

Bartholin's Gland, Abscess of.—See Vulvitis.

Tumors of.—See Tumors of the Vulva.

Bladder, Atony of the.—Gr. *α* priv. + *τόνος* tone. See Paralysis and Paresis of the Bladder.

Calculus.—See Vesical Calculus and Foreign Bodies.

Carcinoma of the.—See Tumors of the Bladder.

Bladder, Contraction of the.—L. *con*, together + *trahere*, to draw. Frequent urination is the only symptom of simple contraction. Ascertain the capacity of the bladder by measuring the quantity of fluid it can contain, using for the purpose a fountain syringe.

Etiology.—Cystitis, causing thickening and contraction of the bladder wall; stone in the bladder; neoplasms; operations on the bladder; atrophy from disuse, where the bladder has never held much urine, as in chronic cystitis, chronic irritability of the bladder, and enuresis of childhood continuing after puberty.

Treatment.—Attend to the cause. Once every day, for five to ten minutes at a time, alternately distend and relax the bladder by means of warm sterile normal salt solution (℥i ad Oi) introduced through a glass catheter and fountain syringe, the reservoir being alternately raised and lowered, the latter when the patient complains of distention. Continue this for several months. The prognosis under this treatment is good. (After Ashton.)

Bladder, Exostrophy of the.—Gr. ἐξ out + στρέφειν to turn. **Palliative Treatment.**—Vaseline, hot water, and dusting powder in children; Earle's or Collins's urinal in adults.

Operative Treatment.—Maydl's operation (the implantation into the colon or rectum of the bladder wall surrounding the mouths of the ureters) is, thus far, the best, but it is reputed dangerous. Holt, however, says "The results are often most surprising. The rectum soon becomes tolerant of the urine, holds it for hours without difficulty, and evacuates it without discomfort. Ascending infection of the kidney seldom occurs." Holt thinks the operation should always be undertaken.

Bladder Fissure.—See Vesico-Urethral Fissure.

Fistulæ.—L. *fis'tula*, pipe. Consult Gynæcological Textbooks.

Foreign Bodies in the.—See Vesical Calculus and Foreign Bodies.

Hemorrhage.—Gr. αἷμα blood + ῥηγνύναι to burst forth. See Hæmaturia.

Hyperæmia of the.—Gr. ὑπέρ over + αἷμα blood. See Bladder Irritability.

Hyperæsthesia.—Gr. ὑπερ over + αἴσθησις sensibility. See Bladder Irritability.

Incontinence.—See Incontinence of Urine.

Inflammation.—L. *inflamma're*, to set on fire. See Cystitis.

Bladder Injuries.—Rupture of the bladder, which may be extra- or intraperitoneal, is usually characterized by pain, difficulty in walking, futile attempts to urinate, and scanty, blood-tinged urine obtained by catheterization. Shock usually occurs; but the patient may appear in good condition.

Treatment.—An exploratory operation should be performed promptly in all cases presenting even a suspicion of wound or rupture of the bladder. After suturing bladder wounds with deep Lembert and superficial peritoneal sutures, distend the bladder with a sterile fluid in order to test the efficiency of the sutures. Irrigate the contaminated parts with hot normal saline solution (0.8 to 0.9 per cent.), and insert a small drain. Employ a retained catheter for seven days, and irrigate the bladder and urethra daily with boric acid solution, ℥i ad Oi.

Bladder Irritability.—L. *irrita're*, to tease. The symptoms of vesical irritability are pain, strangury or slow and painful urination, a frequent desire to urinate, urgency of urination, and incontinence when the detrusor musculature is affected (cystalgia; hyperæsthesia vesicæ); and frequency and difficulty of urination, sometimes pain, and retention of urine when the sphincter is affected (cystospasm; vesical spasm; spasm of the neck of the bladder; contracture of the neck of the bladder; stammering of the bladder). The cause may be a local lesion or a nemosis, reflex or central. In simple neurosis, symptoms are present only during the day. Hyperæsthesia and spasm are both common in children.

Etiology.—A. Irritability Caused by a Local Lesion.—Cystitis or trigonitis; posterior urethritis; organic stricture; vesical calculus; foreign body; vesico-urethral fissure; vesical tuberculosis; vesical tumors.

B. Irritability Without Local Organic Lesion.—Neurasthenia; nervous irritability; hysteria; malaria; cold; acute fevers; lithæmia; excessive acidity of the urine; irritating ingesta (ginger, radishes, spices, turpentine, salicylates, cantharides, quinine, etc.); pyuria (pyelonephritis); crystals in the urine (see Nephrolithiasis); too high or too low specific gravity; excessive coition or masturbation; overwork and anæmia; tabes dorsalis; dementia paralytica; myelitis; multiple lateral sclerosis; spastic spinal paralysis; tumor pressing upon the cord; spondylitis; tumor pressing upon the bladder, especially fibromyoma of the uterus; retroflexion or anteflexion of the uterus; prolapsus uteri; pelvic inflammation; distended colon; hemorrhoids; vaginismus; abdominopelvic operations; strangulated hernia; pregnancy; urethral eversion; urethral caruncle; vulvitis; oxyuriasis; fissure in ano and other rectal diseases; chronic tonsillitis, etc. (absorption of irritating toxines).

Treatment.—Attend to the cause. Open the bowels. Prescribe a bland diet, excluding spices, condiments, salt, pepper, vinegar, mustard, radishes, sauces, salads, pickles, sour foods, rhubarb, tomatoes, asparagus, ginger ale, lemons, acid fruits, carbonated beverages, alcohol, meats, cheese, greasy or fried foods, tea and coffee. Enjoin copious water drinking for the purpose of diluting the urine. A sedative diuretic may be prescribed, *e.g.*, infusion of pareira brava,

infusion of buchu, fluid extract of zea mays, fluid extract of triticum repens, sweet spirits of nitre, or, if the urine is hyperacid, potassium citrate or sodium bicarbonate in large doses (see Drugs, Part 11).

Sedative measures include hot sitz-baths; hot abdominal or vaginal or rectal applications; a suppository of extract of opium, gr. ½, or of belladonna, gr. ¼, or of hyoscyamus, gr. ¼; or laudanum, 10 to 20 drops in warm water, per rectum; or chloral hydrate, gr. x–xv, well diluted, per rectum, at bedtime; sodium bromide, gr. xxx, well diluted, t.i.d., and at bedtime; valerian; asafœtida (see Part 11). Holt gives to a child of two years, tr. of belladonna or of hyoscyamus, ♏i every two hours, together with plenty of water and alkaline diuretics.

℞ Tincturæ belladonnæ,
Liquoris potassii hydroxidi, aa..... ʒi (aa ♏v per dose)
Potassii citratis..... ʒii (gr. x per dose)
Aquæ anisi..... ʒii
Aquæ cinnamomi, q.s., ad ʒvi

M. Sig.—One tablespoonful every four hours. (*Jour. Am. Med. Assoc.*)

Electricity may be of service. One electrode is placed over the bladder and the other (a metal sound, covered, except at the tip, with hard rubber) in the vagina or in the bladder, the latter being filled with sterile water. It may be "carried to the painful strength" Hunner). Prescribe rest and tonics for overworked anæmic women.

Ashton says: "Forcible dilatation of the urethra (see Stricture of the Urethra,) should be performed at once in every case as a routine, empiric plan of treatment irrespective of the cause of the affection," and is very effectual. If this fails, instil or apply, after emptying the bladder, silver nitrate, 2 to 10 per cent. solution, to the base of the bladder and the vesico-urethral juncture, every three to five days. Hunner uses Hegar's dilators up to 12 to 14 mm., with which to dilate and massage the urethra, together with weekly applications of silver nitrate, 10 per cent., to the trigonum.

Bladder, Neuralgia of the.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See Bladder Irritability, above.

Neurosis of the.—Gr. *νεῦρον* nerve. See Bladder Irritability, above.

Papilloma.—L. *papil'la*, nipple-shaped elevation + Gr. *-ωμα* tumor. See Tumors of the Bladder.

Paralysis and Paresis of the.—See Paralysis and Paresis of the Bladder.

Rupture of the.—See Bladder Injuries.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Bladder.

Spasm.—Gr. *σπασμός*. See Bladder Irritability.

Stammering of the.—See Bladder Irritability.

Stone in the.—See Vesical Calculus and Foreign Bodies.

Traumatism.—See Bladder Injuries.

Tuberculosis of the.—See Cystitis.

Tumors.—See Tumors of the Bladder.

Ulcer.—L. *ulcus*. See Cystitis.

Bleeding.—See Hemorrhage.

Calculus, Renal.—L. *cal'culus*, pebble; *re'n*, kidney. See Nephrolithiasis.

Ureteral.—L. *uri'na*, urine + *iter*, passage. See Nephrolithiasis.

Vesical.—See Vesical Calculus and Foreign Bodies.

Cancer of the Bartholin Gland.—L. for crab. See Tumors of the Vulva.

Bladder.—See Tumors of the Bladder.

Kidney.—See Tumors of the Kidney.

Rectum.—See Rectal and Anal Tumors.

Urethra.—See Tumors of the Urethra.

Cancer of the Uterus.—"Any woman between thirty-five and sixty, who comes to the physician complaining of increased menstruation, of metrorrhagia, of pelvic pain, or of vaginal discharge, should be examined without loss of time on the suspicion of cancer" (H. A. Kelly). The slightest bleeding a year or so after the menopause is suspicious of cancer. Pain is usually a late symptom. In any suspected case the endometrium should be curetted, the scrapings placed at once in 5 per cent. formaldehyde solution to harden them, fixed, impregnated with paraffin in preference to celloidin, sectioned, stained with hæmatoxylin and counterstained with eosin, mounted in balsam, and examined microscopically. Many slides must be examined, and if necessary the curetting repeated whenever the hemorrhage reappears. If the cervix is involved, a small wedge-shaped portion should be excised and dropped in hardening fluid for examination. Sections should be made at right-angles to the surface.

Complete hysterectomy (Wertheim's radical pan-hysterectomy or Werder's ignihysterectomy) should be performed in cancer of the body of the uterus if there is the least chance of a cure. If on opening the abdomen the case is found to be inoperable, one may ligate both internal iliac arteries and one ovarian artery, leaving only the other ovarian artery to supply the uterus.

The growth of the tumor may thus be inhibited. The X-rays (*q.v.*), radium (*q.v.*), or mesothorium should be employed in inoperable cases, as also after hysterectomy, in order, if possible, to prevent a recurrence. Says Ashton: "If recurrent cases are taken early, the induration usually disappears rapidly and a cure results."

Those cases are most favorable for operation and cure in which it is possible to move the uterus freely, that is, to push it upward readily by a finger on the cervix. The prognosis after hysterectomy for cancer of the body of the uterus is very good; for cancer of the cervix, bad. "Cancer of the cervix, however, responds most favorably to radium, and can almost always be wiped out by a big thorough application." (H. A. Kelly.)

Palliative Treatment in Inoperable Cases.—Under general anæsthesia, with the finger as a guide, curette away the diseased tissue with a sharp serrated spoon curette or loop curette, using a small curette for small pockets, until a "firm, hard base is reached." In order to avoid entering the peritoneum, bladder, or rectum, sounds may be used in the latter two cavities. Should the peritoneum be entered, insert an iodoform gauze tampon closely in the rent, continue curetting, and after all removable material has been scraped away, cleanse the vagina, remove the tampon, and insert a fresh one (this should be removed after three days and another inserted). Fill the vagina with loose iodoform gauze, or gauze wrung out of carbolic acid, 2 per cent., and apply a vulvar pad (H. A. Kelly). For profuse bleeding following curettage, apply pledgets of cotton dipped in half-strength dilute acetic acid, or Monsell's solution (*q.v.* in Part 11), or antipyrine, 5 per cent., or formalin (25 to 40 per cent.) and adrenalin chloride (1 : 1000), equal parts (avoid contact with healthy mucous membrane), or adrenalin chloride, 1 : 1000 alone (one may infiltrate the tissues with one part adrenalin to three parts normal saline solution, 0.8 per cent.), followed by the "cautery knife at a dull red heat until the surfaces are thoroughly charred." Cauterization may, indeed, be employed as a matter of routine, whether excessive hemorrhage is present or not.

Douche the vagina daily thereafter with lysol, ʒi to the quart; or liq. sodæ chlorinatæ, ʒi to the pint; or creolin, ʒi ad Oii–iv; or formalin, ʒss ad Oviii; or mercury bichloride, 1 : 4000; or carbolic acid, ♏xv ad Oii; or thymol, gr. xv ad Oii; or hydrogen peroxide, 1 part of the commercial peroxide to 3 to 4 parts of water; or potassium permanganate, gr. xv to 10 to 5 to 3 quarts ("the best deodorizer").

Following the douche, dust with talcum, or methylene-blue, or methylene-violet powder, or insert tampons wet with the 1 per cent. solution, or dress with 5 per cent. iodoform or carbolic acid gauze, or inject sterile glycerine and olive oil, equal parts, or refined petroleum oil, and anoint the vulva with the same, or with vaseline, or with oil and lime water, equal parts, or with sod. bicarb., one part to three parts of vaseline, to protect the vagina and vulva against irritating discharges. One may swab the affected parts two or three times a week, with tr. iodi, or with a saturated solution of iodine crystals in pure carbolic acid. "A sudden profuse hemorrhage may be checked by a douche of hot water, hot vinegar, or hot alum solution" (ʒi ad Oi).

The cauterization may have to be repeated in two to six months. According to some, curettement and cauterization should be repeated at least every four weeks.

Gellhorn strongly advocates the following treatment: After drying the curetted area with cotton pledgets, smear the healthy vagina and vulva thickly with vaseline. Then stop the anæsthetic, place the patient in the Trendelenberg posture, and pour ½ to 1 oz. of acetone through a tubular speculum into the cancerous crater. After twenty to thirty minutes, lower the table and allow the acetone to run out through the speculum. Wash all traces of acetone from the vagina and vulva, pack into the crater gauze wrung out of acetone, and hold in place with dry cotton tampons firmly packed into the vagina. In four or five days repeat this treatment, except the preliminary curettement. Thereafter, two or three times weekly, dry the cavity after the exposure to acetone, and insert a cotton tampon covered with vaseline which should be removed after several hours. "More than one curetting is unnecessary."

A. R. Jackson packs the curetted cavity firmly with a gauze tampon or small balls of cotton saturated with zinc chloride solution, 30 to 50 per cent. Webster employs tampons wrung from pure formalin. Contact with healthy mucous membrane should be avoided. The tampons are held in place by cotton or gauze tampons covered with sweet oil or an alkaline ointment. They should be removed after three days and douches then employed.

Chrobak, after curetting and smearing the healthy mucous membrane with vase-

line, applies fuming nitric acid, blowing away the fumes from time to time. Then he packs with gauze, which he removes after a few hours, then insufflates iodoform and tannic acid, equal parts, or iodoform and charcoal, instead of douching. After two or three weeks the slough is thrown off, and the resulting granulating surfaces are treated with silver nitrate or tincture of iodine, Curettage and cauterization are frequently repeated.

The X-rays (*q.v.*), radium (*q.v.*), and mesothorium are valuable therapeutic agents in the treatment of inoperable cases. Cures may even possibly be effected. Using 100 mgrms. of radium in a platinum tube 2mm. thick, surrounded by rubber, 2 mm. thick, the exposures may be of twelve to fifteen hours duration or longer. If the tube can be completely surrounded by the growth and considerable ulceration is present, exposures of twenty-four hours or longer are admissible. The treatment may be repeated in a month.

Attend to the bowels and kidneys, and enjoin light exercise, fresh air day and night, and full diet. Ashton gives, as a tonic, for an indefinite period the following:

℞ Hydrargyri chloridi corrosivi,
Acidi arsenosi, aa..... gr. i
Extracti nucis vomicæ..... gr. xxv
Ferri et quininæ citratis..... gr. c.c.
M. et ft. pil. 100.
Sig.—One pill t.i.d.p.c. (Ashton.)

For pain, employ phenacetin, antipyrine, aspirin, trional, heroin, codeine, morphine (see Part 11). Schlesinger's analgesic solution (*q.v.*) is warmly recommended.

Cancer of the Vagina.—See Tumors of the Vagina.

Vulva.—See Tumors of the Vulva.

Carcinoma.—Gr. *καρκίνος* crab; + *ωμα* tumor. (See Cancer.)

Caruncle, Urethral.—See Urethral Caruncle.

Catarrh, Cervical.—Gr. *καταῤῥεῖν* to flow down. See Cervicitis and Endocervicitis.

Cauliflower Excrescences.—L. *ex,* out + *cres'cere,* to grow. See Verrucæ.

Cellulitis, Pelvic; Parametritis.—L. *cel'lula,* little cell + Gr. *-ιτις* inflammation; *pelvis,* basin; Gr. *παρά* beside + *μήτρα* uterus + *-ιτις* inflammation. See Pelvic Inflammatory Disease.

Cervical Atresia.—See Atresia of the Cervix.

Cancer.—See Cancer of the Uterus.

Catarrh.—Gr. *καταῤῥεῖν* to flow down. See Cervicitis and Endocervicitis.

Cervical Ectropion.—See Eversion or Ectropion of the Intra-Cervical Mucosa.

Cervical Erosion.—L. *cer'vix,* neck; *ero'dere,* to eat out. Erosion of the cervix, so-called, is characterized by a "red, granular area surrounding the external os," "due to maceration and desquamation of the squamous epithelium and the covering of the denuded areas by cylindric ciliated epithelium which grows out from the cervical canal" (Penrose ?). Remember that an apparent erosion is often an everted, lacerated cervix, as shown by bringing the cervical lips together with tenacula.

Etiology.—Cervical laceration; cervicitis; endometrial discharge; congenital anomaly.

Treatment.—Treat the cause. "The treatment of congenital erosion of the cervix when it is so marked as to produce distinct symptoms, is amputation of the cervix." (Penrose.)

Cervical Eversion.—See Eversion or Ectropion of the Intra-Cervical Mucosa.

Cervical Hypertrophy.—L. *cer'vix,* neck; Gr. *ὑπέρ* over + *τροφή* nutrition. Ashton describes (1) a supravaginal hypertrophy, "almost exclusively limited to virgins and those who are sterile," with uterine prolapse as the essential symptom, which requires high amputation of the cervix, followed later, if necessary, by anterior and posterior colporrhaphy or hysterorrhaphy, or both (Gr. *κόλπος* vagina + *ῥαφή* stitch; *ὑστέρα* womb); (2) infravaginal hypertrophy, very rare, "always congenital and met only in virgins and sterile women," the treatment of which, if called for, is amputation; (3) apparent hypertrophy, occurring in prolapsus uteri and in laceration of the cervix, revealed by the disappearance of the apparent hypertrophy when the patient assumes the knee-chest posture, and when the torn cervical lips are brought together with tenacula. The "enlargement of congestion" (see Cervicitis), should not be mistaken for real hypertrophy.

Dudley says: "Infravaginal elongation of the cervix is often apparent, seldom or never real."

Cervical Lacerations.—L. *cer'vix,* neck; *lacera're,* to tear. Puerperal laceration of the cervix is prone to give rise to cervicitis (enlargement, cystic degeneration, erosion, eversion), subinvolution, endometritis, metritis, perimetritis, parametritis, chronic tubal and ovarian disease (in other words, pelvic inflammatory disease), uterine displacements, sterility, repeated abortions, dysmenorrhœa, menorrhagia, amenorrhœa, leucorrhœa, fever, headaches, backache,

dyspepsia, and other reflex or toxic disturbances, even neuralgia of the eyeball; indeed, possibly any of the numerous ailments that result from toxic absorption. The writer recently had a patient who presented no other symptoms than an irregular fever and prostration, which disappeared promptly on the repair of a comparatively recently lacerated cervix. Cervical tears also predispose to cancer.

Cervical laceration may be demonstrated by bringing the torn lips together with tenacula. It should be distinguished from endocervicitis, congenital eversion, and cancer.

Treatment.—The treatment, in cases with symptoms, is surgical. Ashton gives the following indications for operation:

1. "Operate upon all lacerations which are complicated with induration and hypertrophy of the cervical tissues; eversion of the intracervical mucous membrane; cystic degeneration; and erosion."

2. "Operate upon all lacerations which are responsible for subinvolution of the uterus, endometritis, and uterine displacements"; also sterility or repeated abortions.

3. "Operate upon all lacerations which are associated with a sensitive plug of scar tissue in the angle of the wound."

Operation should be preceded by two or three weeks to three months of general and local preparatory treatment, as follows: a nutritious diet, regular hours of eating and sleeping, rest before and after meals, abdominal and general exercises, general massage, support of the clothing from the shoulders, an abdominal binder, fresh air day and night, a daily morning warm bath in a warm room followed by a cold spinal douche, preferably before breakfast, never shortly after a meal, hot sitz-baths, a daily morning saline (*q.v.*), and tonics are important invigorating measures. Twice a day the patient should take a hot vaginal douche, and at night insert far back against the cervix and vaginal vault, by means of dressing forceps, a 25 per cent. ichthyol-glycerine or plain glycerine tampon attached to a string, which is to be removed in the morning. Twice a week the physician may puncture the cervix and withdraw from one-half to one ounce or more of blood, then dry thoroughly, and paint the cervix and vaginal vault with tincture of iodine, and insert an ichthyol-glycerine tampon, which the patient should remove by an attached string at the end of twelve hours. Iodoform ointment (*q.v.*) may be applied to erosions. Cysts should be opened (no more than six or eight at one sitting) and their walls cauterized with pure carbolic or nitric acid (Ashton). Local treatment should be intermitted during menstruation.

After the parts have been restored to a favorable state, operate. First dilate and thoroughly curette the uterus, irrigate, and swab the uterine cavity with a saturated solution of iodine in 95 per cent. carbolic acid. Then perform Emmet's trachelorrhaphy (Gr. τράχηλος neck + ῥαφή suture), or if the cervix is much diseased, Schrœder's resection operation (Dudley). Says Ashton: "Trachelorrhaphy should be performed in cases in which there is only slight loss of tissue, and an absence of induration, cystic degeneration, and extensive erosion. Amputation, on the other hand, is indicated in stellate lacerations; in tears which are associated with great loss of tissue; and in cases complicated with cervical induration, cystic degeneration, and extensive erosion." If the preparatory treatment does not relieve the condition, amputation of the cervix and not trachelorrhaphy is indicated. Dudley prefers Schrœder's resection of the cervix to amputation.

After repairing the cervix, repair the pelvic floor, if relaxed, and draw the uterus forward, if retro-displaced, by its round ligaments or otherwise.

Contraindications to the performance of cervical operations are acute pelvic inflammation and acute or chronic suppuration (not chronic non-suppurative inflammation).

Cervical Polypi.—L. *cer'vix*, neck; Gr. πολύς many + ποῦς foot. Three kinds of polypus are distinguishable, viz., mucous (the commonest; the result of inflammation), fibroid, and papillary. Examine the growth microscopically for malignancy. Menorrhagia, metrorrhagia, dysmenorrhœa, and leucorrhœa are common symptoms.

Treatment.—Twist or cut away pediculated polypi. Excise sessile ones well below the base of the growth into the healthy tissue of the cervix, and close the wound with interrupted sutures. Consult also Fibromyoma Uteri, and Cervicitis.

Cervical Stenosis.—Gr. στένωσις narrowing. See Atresia of the Cervix

Tears.—See Cervical Lacerations.

Tuberculosis.—See Tuberculosis of the Genital Organs.

Ulcers.—See Cervicitis.

Cervicitis and Endocervicitis; Cervical Catarrh.—L. *cer'vix*, neck; Gr. ἔνδον within; -ιτις inflammation; καταῤῥεῖν to flow down.

Symptomatology.—Cervical leucorrhœa is present. The cervical discharge is stringy, glairy, viscid, thick, tenacious, and mucoid,

like the white of an egg, or it is muco-purulent, whereas a vaginal discharge is "curdy or milky or creamy", and an endometrial discharge is more serous. (Remember that endometritis is usually not present.) The cervical glands may become choked and thus converted into retention cysts (Nabothian follicles). Erosion, "due to maceration and desquamation of the squamous epithelium and the covering of the denuded areas by cylindric ciliated epithelium which grows out from the cervical canal," or eversion (ectropion, *q.v.*), or mucous polypi may be present. Erosions, both simple and papillary, should be distinguished from carcinoma by the friability and bleeding characteristic of the latter and by the microscopic examination of an excised piece.

Etiology.—Vulvo-vaginitis; cervical laceration; frequent cold douches practiced to prevent conception; excessive coitus; instrumental and digital manipulations; foreign bodies; polypi; tumors; uterine displacement; subinvolution following labor, miscarriage, or menstruation.

The gonococcus is the most frequent cause; but other pyogenic organisms may be causative. Cervical ulceration may be traumatic (caused by a pessary), carcinomatous, tubercular, syphilitic, or chancroidal.

Treatment.—I. Acute or Recent Inflammation.—Attempt to destroy the infection, whether gonorrhœal or not, before it reaches the body of the uterus. First remove mucus from the cervical canal by means of suction bulbs and cotton pledgets soaked in a solution consisting of one dram of equal parts of sodium bicarbonate and sodium biborate dissolved in six ounces of water. Then apply thoroughly, by means of a corrugated aluminum applicator wrapped with cotton, introduced up to but not beyond the internal os, a saturated solution of iodine in 95 per cent. carbolic acid, or formaldehyde, 40 per cent., or pure carbolic acid, or silver nitrate, ʒi to the ounce. Then paint the cervix and vaginal vault with tincture of iodine, and insert a boroglycerine gauze pack attached to a string, which should be removed at the end of twenty-four hours, followed by hot vaginal douches (see Vaginitis).

II. Chronic Inflammation.—In mild cases, one may puncture all Nabothian cysts seen, paint the cervix and vaginal vault with tincture of iodine or silver nitrate, 20 to 30 per cent., and insert a glycerine tampon attached to a string, to be removed at the end of twenty-four hours. The silver solution may be applied every ten days and cleansing douches (see Vaginitis,) used in the intervals (H. A. Kelly). If the catarrh persists, the canal may be cleansed of mucus by means of suction bulbs and cotton pledgets soaked in a solution consisting of one dram of equal parts of sodium bicarbonate and sodium biborate dissolved in six ounces of water, and then tincture of iodine, pure ichthyol, silver nitrate, gr. xx–ʒiss to the ounce, or pure lactic acid applied thoroughly up to the internal os by means of a cotton-wound applicator, followed by a tampon of boric ointment, 10 per cent., or of ichthyol and glycerine, 25 per cent., or argyrol and glycerine, 25 per cent., or glycerite of boroglycerine, to be removed at the end of twenty-four hours, followed by daily hot normal saline (ʒi ad Oi) douches. The stronger applications should be made every ten days, the weaker two or three times a week (Noble and Anspach). Repeated cauterization with strong silver nitrate solution is said to be effectual. The canal may be dilated, if necessary, ¼ to ½ inch without an anæsthetic (Penrose). Penrose employs, for intracervical application, zinc chloride or sulphate, gr. i–ii to the ounce; or tannic acid, gr. i–ii to the ounce; or silver nitrate, 5 to 10 per cent.; or pure carbolic acid; or tr. iodi, two parts, and carbolic acid, one part. If the cervix is much congested, multiple punctures may be made or the artificial leech applied. Mucous polypi should be removed with the sharp curette or scissors. If the cervix is lacerated and everted, the diseased mucosa may be excised, after making incisions in each lateral angle between the anterior and posterior lips, followed by union of the lips with catgut sutures. An iodoform pack is then placed in the vaginal vault, and the patient kept in bed five days, after which the pack is removed, and after a few days daily boric acid douches (say ʒi ad Oi) begun. (H. A. Kelly.)

In bad cases, Hunner's use of the actual cautery is recommended as very effectual. No anæsthetic is required. The anterior cervical lip is grasped with tenaculum forceps, and the canal, well up to the internal os, burned out all around to a depth of 2 to 5 mm. (⅛ to 3/16 inch), with the cautery heated to a bright red. This is repeated every ten to fourteen days. Antiseptic douches should be employed in the intervals between cauterizations. The patient should be warned that "in a week or ten days there will be a slightly bloody and increased purulent discharge." Or, instead

of cauterizing superficially all around, one may make three deep linear cauterizations (anæsthetization may then be required), after which the patient should remain in bed for three days. Six to eight weeks or longer should elapse before repeating the deep cauterizations.

Some dilate the canal slightly, and scrape it out thoroughly with a sharp curette; then place a boroglyceride pack in the vaginal vault, which is removed at the end of twelve hours and a hot boric acid douche given.

Dudley usually prefers, in deep-seated disease, thorough excision of the mucosa by Schrœder's operation.

Bandler says: "Treatment of cervical catarrh should be conservative and carried out entirely in the vagina and not within the cervix." Once or twice a week he draws out the cervical secretion with suction bulbs; then applies pure carbolic acid to erosions, followed after a few seconds by pure tincture of iodine to the cervix and vaginal vault. He then pours in one ounce or more of boroglyceride through a Ferguson speculum, and packs the vagina with gauze, which is removed after twenty-four hours and the vagina douched. Twice daily the patient employs a douche of bichloride of mercury, 1 : 4000 (antiseptic), or acetate of alum, ʒi to the quart (healing). Three times a week the negative electrode of a galvanic battery may be inserted into the cervical canal, and 10 milliampères administered for ten minutes. (Dudley condemns electrical treatment as both inefficient and dangerous). Pelvic congestion is corrected by "sitz-baths, Nauheim baths (*q.v.* in Part I), and the use of the sinusoidal current applied to the abdomen." Later, to stimulate the growth of squamous epithelium, he paints on silver nitrate, 1 to 5 per cent., once or twice a week. When the canal becomes clearer and the mucus colorless, he gently paints the lining of the cervix with tincture of iodine or 1 per cent. silver nitrate.

All local treatment should be preceded, of course, by thorough cleansing of the vagina and vulva. No intracervical treatment should be performed if salpingitis, ovaritis, cellulitis, or peritonitis is present.

The bowels should be kept active, and tonics given, if necessary.

Radium therapy (*q.v.*) may be tried.

Cervix, Affections of the.—(See Cervical Affections.)

Chancre.—Fr. See Syphilis, in Part 1.

Chancroid.—Fr. *chancre* + Gr. εἶδος form. A local, contagious, venereal disease, caused by the dumb-bell shaped strepto-bacillus of Ducrey, and characterized by an incubation period of from one to twelve days, followed by the appearance of one or several ulcers, with undermined edges, a moderately soft base, and a profuse, purulent, auto-inoculable discharge, and often involvement of the adjacent lymph glands which tend to suppurate. The ulcers are usually multiple, and present a punched out appearance. They are slow in healing, and the occurrence of buboes (about once in every three cases) greatly protracts the case.

Treatment.—If the disease is not over seven days old (Keyes), proceed as follows: Carefully cleanse the ulcers, vulva, and vagina with bichloride solution, 1 : 2000; dry thoroughly, using blotting paper for the ulcers, and paint the latter well with cocaine solution, 4 to 10 per cent. Dry carefully again, and apply thoroughly to every part of each ulcer, by means of a glass rod, matchstick, or cotton swab on the end of a toothpick, pure carbolic acid, taking care not to touch healthy tissue, which may, if desired, be protected with vaseline. Now dry again with blotting paper, and apply pure nitric acid or sulphuric acid, letting no point escape. Douche the vagina and vulva again, dry thoroughly, and dust into the vagina and into the ulcers, iodoform powder, which may be somewhat deodorized by means of coumarin or oil of sassafras (gtt. ii to each ʒiiss), or equal parts of powdered coffee. Keep the vulval lips separated with lint or cotton held in place by means of a T-bandage. The thermocautery applied at a dull red heat is also effectual; but Noble and Anspach say that it is apt to produce too much sloughing. The application of argyrol crystals following cocainization is well praised.

The douches and powder applications should be continued twice daily, "until the sloughs have separated and the granulations have become healthy," when the iodoform may be replaced by unguentum hydrargyri nitratis, 1 part, to vaseline, 7 parts; or ung. zinci oxidi (*q.v.*) containing 3 per cent. carbolic acid; or balsam of Peru and castor-oil, equal parts; or acetanelid, boric acid, and calomel, equal parts; or dermatol; or calomel; or boric acid. Touch exuberant granulations with the silver nitrate stick or solution (gr. xxx ad ʒi).

If the ulcers are over seven days old, do not cauterize them; for, says Keyes, if cauterization then fails, which it almost invariably does, it leaves the sore larger than ever. Bathe the parts, instead, for

twenty minutes or longer, two to four times a day, with bichloride solution, 1 : 5000; or boric acid, 4 per cent.; then dry with a sterile cloth, and apply one of the above powders. Indolent ulcers, however, may be touched twice a week with tincture of iodine, or the silver stick, or pure carbolic acid.

Early chancroids may be aborted and cured by cauterization; but, says Keyes, "if the first cauterization fails, it is futile to repeat it."

The patient should keep off her feet as much as possible in order to prevent bubo. Should the latter appear, put the patient to bed, and apply the ice-bag until resolution occurs or until the inflammation becomes active, when heat should be substituted. Some recommend the application of tincture of iodine or of equal parts of ung. hydrargyri, ung. belladonnæ, ung. iodi, and ichthyol (Noble and Anspach), covered with waxed paper and compression made with an ascending spica bandage of the groin. Keyes says, however, "Do not, under any circumstances, paint the groin with iodine," because it irritates the skin and promotes autoinoculation should the bubo break down.

If suppuration occurs, it is much preferable to excise the gland intact. If this is not practicable, it is generally advised that the abscess be incised, all diseased tissue curetted away, the cavity irrigated with corrosive sublimate, 1 : 1000, dried, cauterized with pure carbolic acid, and packed with iodoform gauze. But Keyes says, "Suppurating bubo should be drained by very small incisions, almost punctures, multiple if need be, followed by injection of a 10 per cent. iodoform-in-vaseline ointment," and the application of a hot water bag, the injection to be "repeated every third day until the purulent discharge ceases." Persistent induration calls for excision; but do not excise the glands of both groins. Should the bubo break down and infect the edges of the wound, employ the actual cautery, under general anæsthesia, and destroy thoroughly and deeply, without fear, all the infected tissue; then pack with gauze, or apply iodoform or wet dressings.

If the urethra is involved, as ascertained by endoscopic and bacteriologic examination, introduce, following urination, suppositories of iodoform in cocoa-butter, and cover the meatus with cotton or gauze to keep the suppository in. Cure thereby is said to be rapid.

Prescribe a nutritious diet, perhaps cod-liver oil (*q.v*), fresh air day and night, rest, regular hours of eating and sleeping, regulation of the bowels, and as a tonic, elixir ferri, quininæ, et strychninæ, one teaspoonful well diluted, t.i.d.p.c.

Robbins and Seabury recently report excellent results from the following plan of treatment: After an examination for spirochætes is made (see under Syphilis), a "25 per cent. solution of copper sulphate in distilled water is applied to the sore, and the short high-frequency spark from a rather fine-pointed vacuum electrode is applied directly to the sore for one to three minutes, depending on the extent of the ulceration." "Especial care is exercised in carrying the point of the electrode well down into any fissure or undermined edge, and the area of application should extend over the edge of the sore about $\frac{1}{16}$ inch into the doubtfully healthy area." "The current is not turned off until every crack and crevice has been thoroughly treated and the surface of the sore is changed to a dark greenish gray." "It is then wiped dry and some antiseptic powder is lightly applied to the entire mucous surface of the preputial cavity." "If the sore is exposed, it should be covered with a thick moist dressing, say of bichloride, 1 : 10,000, which should be changed once or twice daily, and must not be allowed to stick." It must be moistened at least three or four times a day. The original cauterization may be repeated if it is evident that the chancroidal infection has not been completely destroyed.

Change of Life.—See Menopause.

Chorio-Epithelioma; Deciduoma Malignum; Syncytioma Malignum.—Gr. χόριον skin; ἐπί on + θηλή nipple; -ωμα tumor; L. *decid'uus*, falling off; Gr. σύν together + κύτος cell; L. *malig'nus*, malicious. A malignant, rapidly metastatic chorionic neoplasm, appearing weeks, months, or even years after an hydatidiform mole, an abortion, a full-term labor, or an extra-uterine pregnancy, first manifested by vaginal metastases or profuse intermittent uterine hemorrhages and rapid enlargement of the uterus, and diagnosed by microscopic examination of the deeper portions of the uterine scrapings. The growth is composed of syncytium and Langhans's layer of cells.

Treatment.—Immediate pan-hysterectomy, as for cancer, and the excision of all accessible metastases is demanded. The disease is usually fatal within six months, even after hysterectomy, but spontaneous recovery is possible, and metastases may disappear after the removal of the primary growth.

Chyluria.—See Part 1.

Climacterium.—Gr. κλιμακτὴρ round of the ladder. See Menopause.

Clitoris, Adhesions of the.—Gr. κλειτορίς. See Masturbation.

Coccydynia; Coccygodynia.—See Part 1, General Medicine and Surgery.

Coition, Difficult.—L. *coit'io*, a going together. (See Vaginismus.)

Colic, Renal.—Gr. κόλον colon; L. *rén*, kidney. See Nephrolithiasis, in Part 1.

Coloptosis.—Gr. κῶλον colon + πτῶσις fall. See Splanchnoptosis, in Part 1.

Colpitis.—Gr. κόλπος vagina + -ιτις inflammation. See Vaginitis.

Colpohyperplasia Cystica.—Gr. κόλπος vagina + ὑπέρ over + πλάσις formation; κύστις bag. See under Vaginitis.

Condylomata.—Gr. κονδύλωμα wart. See Verrucæ; Warts,

Congestion of the Pelvis, Chronic.—L. *conge'rere*, to heap together; *pel'vis*, basin; Gr. χρόνος time. **Etiology.**—Sedentary life; constipation; tight lacing; excessive venery; "sexual engorgement in love-making"; pregnancy; abdominal and pelvic tumors; obesity; heart weakness; cardiac, pulmonary, renal, hepatic, and splenic disease; uterine displacements; pelvic inflammatory disease; etc.

Symptomatology.—Feeling of weight and discomfort in the pelvis, relieved on lying down or on assuming the knee-chest posture; congestion of the external genitalia; leucorrhœa due to hypersecretion; menorrhagia. Varicocele of the broad ligament may result.

Treatment.—Treat the cause. The congestion may be ameliorated by means of daily saline laxatives (*q.v.*), daily hot vaginal douches in the recumbent posture, the assumption of the knee-chest posture for about ten minutes several times a day, sleeping with the hips elevated, and the application every other day to the cervix and vaginal vault of tampons of glycerite of boroglycerine, to be removed by an attached string at the end of eighteen to twenty-four hours. (Ashton.)

Constipation.—See Constipation, in Part 1, General Medicine and Surgery.

Contraction of the Lumen of the Bladder.—See Bladder, Contraction of the.

Contracture of the Neck of the Bladder.—See Bladder Irritability.

Cyst.—See Cysts.

Cystalgia.—Gr. κύστις bladder + ἄλγος pain. See Bladder Irritability.

Cystic Vaginitis.—Gr. κύστις bag. See Vaginitis.

Cystinuria.—Cystin + Gr. οὖρον urine. See Nephrolithiasis, in Part 1.

Cystitis.—Gr. κύστις bag + -ιτις, inflammation. Inflammation of the bladder is manifested by frequent, painful micturition, urgency, vesical tenesmus or straining, burning pain in the bladder, pyuria, and sometimes hæmaturia. In some grave cases a part or whole of the vesical mucous membrane may become detached and expelled (exfoliative cystitis). Ureteritis and pyelitis are possible sequelæ.

Cystitis should be distinguished from ureteral, renal, and urethral infection, vesicourethral fissure, simple irritability of the bladder, contraction of the bladder, and vesical stone or foreign body. To this end employ the urethroscope, cystoscope, ureteral catheter, and urinalysis. (See Urinalysis; and Pyelonephritis, in Part 1, for important diagnostic criteria.)

Etiology.—Local congestion due to menstruation, pregnancy, the puerperal state, pelvic or abdominal tumors, uterine, tubal, or ovarian disease, peritonitis, hemorrhoids, fecal accumulations, exposure to cold, disease of the heart, lungs, liver, or kidneys; retention of urine due to stricture or tumor of the urethra, uterine displacements (particularly prolapse), cystocele, extravesical growths, vesical paralysis (due to tabes, general paresis, myelitis, spinal injury, spastic spinal paralysis); irritating urine due to turpentine, cantharides, oil of sabine, the balsams, salicylates, calomel, alcohol, etc., also rheumatism and gout, or the so-called uric acid diathesis, hyperacidity, hyperalkalinity, too high or too low specific gravity, crystals (uric acid, calcium oxalate, phosphates—see Nephrolithiasis); foreign bodies; calculi; traumatism due to childbirth, external injury, operation, instrumentation, the pressure of pessaries, the injection of strong salt solution into the bladder; vesical tumors; contiguous inflammation (appendicitis, pelvic inflammatory disease); adherence of the bladder to the bowel; disease of the kidney or ureter; vulvitis; urethritis; masturbation; inanition and anæmia; the exanthemata, diphtheria, "cold"; overdistention of the bladder in polyuria or prolonged retention of urine.

Offending organisms are the colon bacillus, typhoid bacillus, gonococcus, and tubercle bacillus, producing an acid cystitis; and streptococci, staphylococci, and proteus vulgaris, producing an alkaline cystitis.

Treatment.—I. ACUTE CYSTITIS (WITH DISCHARGE OF PUS, MUCUS, AND BLOOD).—Avoid cystoscopy and local treatment. Put the patient to bed, apply heat to the epigastrium in the form of hot moist flannels

or hot bran bags, and have the patient take hot vaginal douches or hot sitz-baths, lasting ten to fifteen minutes, two or three times daily. Open the bowels with Rochelle salts (both laxative and diuretic), ʒi in dilute solution every two or three hours; and prescribe a bland, liquid or soft diet with copious water drinking between meals (2 to 3 quarts daily of plain water, Vichy water, or flaxseed tea). Prohibit meat, acid fruits, condiments, spices, mustard, horseradish, pepper, salt in excess, radishes, rhubarb, tomatoes, asparagus, lemons, pickles, salads, sauces, vinegar, cheese, greasy or fried foods, tea, coffee, ginger ale, alcohol. Milk is the best food. If the patient is very septic, prescribe concentrated liquid nourishment (milk and eggs) and strychnine (*q.v.*).

For severe pain, prescribe the following:

℞ Extracti opii..... gr. ss
Extracti belladonnæ..... gr. ¼
Olei theobromatis, q.s.,
M. et fiat suppos., mitte talis 6.
Sig.—One every six or eight hours. (H. A. Kelly.)

Ashton and Dudley recommend, for the relief of pain and tenesmus in mild cases, rectal suppositories of ichthyol, gr. iii, once or twice daily.

Prescribe, as a urinary antiseptic, hexamethylenamine (urotropin) gr. v–vii–xv, in capsule or powder with water, every three or four hours. Urotropin liberates formaldehyde in the urine only when the latter is acid. The claim that helmitol liberates formaldehyde even if the urine is not acid has been proven incorrect (see Part II for dosage at various ages, etc.). Suspend the drug if it causes irritation, and reduce the dose.

Other less valuable urinary sedatives and antiseptics are:

Saliformin, gr. v, every four hours.

Salicylic acid, sodium salicylate, or salol, gr. v–x, every three hours (salol liberates carbolic and salicylic acids in the urine. It should not be pushed to the point of producing "lumbar heaviness." These drugs are recommended in gonorrhœal cystitis, in which it is important to keep the urine acid).

℞ Sodii salicylatis..... ʒiss (gr. iii per dose)
Hexamethylenaminæ.... ʒiss (gr. iii per dose)
Tincturæ hyoscyami..... ʒiv (♏viii per dose)
Elixiris simplicis, q.s. ad.. ʒiv
M. Sig.—One dram in water every two hours ("a valuable combination" in gonorrhœal cystitis—(Bandler).

℞ Extracti hyoscyami..... gr. ss
Phenylis salicylatis..... gr. v
Hexamethylenaminæ..... gr. v
Ft. tal. caps. No. 20.
Sig.—One every three hours, with water. (Bandler.)

Fluidextracti zeæ mays, ½ teaspoonful, well diluted every three or four hours ("the best drug I know to allay the irritability of the bladder." H. A. Kelly.)

Fluidextracti tritici repentis, ½ teasp., well diluted, every three or four hours.

Infusum uvæ ursi, ʒss–i, t.i.d.

Infusum buchu, ʒss–i, t.i.d. Casper says that buchu leaves are the best of the vegetable diuretics.

Fluidextract of pareira brava, ʒi–ii, in lots of water, three to four times a day.

Casper recommends for their sedative and astringent properties, two teaspoonfuls of a mixture of several herbs; buchu leaves, couch grass, pareira brava, cornsilk, uva ursi, alchemilla, etc., to each cup of water, to be boiled for several minutes, three or four cupfuls a day.

Ol. santali or ol. copaibæ, ♏v–x–xx, in capsule, t.i.d.p.c. (suspend the drug if gastric indigestion occurs; Ol. santali is indicated in staphylococcus infection and gonorrhœa. Le Fevre says, the combination of ol. santali vel copaibæ with salol or sodium benzoate is "especially efficacious").

Spiritus ætheris nitrosi, 1 teasp., well diluted, every two to three hours.

Ol. eucalypti, ♏x in water every two hours.

Tr. hyoscyami, 30 drops, well diluted, every two or three hours.

For ammoniacal urine, prescribe:

Benzoic acid, gr. x, in capsule, three or four times a day.

Sod. or ammon. benzoate, gr. v–xxx, t.i.d.

Boric acid, gr. v–xv, in capsule, three to six times a day.

Acid sodium phosphate, gr. xxx, in water, every three hours or four times a day.

℞ Acidi benzoici..... ʒii (gr. v per dose)
Acidi borici..... ʒiii (gr. viiss per dose)
Aquæ cinnamomi.. ʒxii
M. Sig.—Tablespoonful in water, four times daily (Emmet.)

For strongly acid urine, prescribe, if deemed advisable:

Pot. citrate or bicarbonate, ʒi–ii, dissolved in one to two pints of flaxseed tea, and given in divided doses during the day. (Penrose.)

℞ Potassii citratis..... ʒiv (gr. xx per dose)
Tincturæ hyoscyami..... ʒvi? (♏xxx per dose)
Elixiris simplicis, q.s., ad. ʒvi
M. Sig.—One tablespoonful every two or three hours in water. (H. A. Kelly.)

In hyperacute cases, not improved by the foregoing treatment, open and drain the bladder through the vagina, and place the patient in a hot water bath for several hours every day. To keep the fistula open, sew the vesical to the vaginal mucosa by interrupted catgut sutures. (H. A. Kelly.)

Keep the patient in bed "as long as vesical pain and tenesmus continue." (Penrose.)

As soon as the acute symptoms are alleviated, irrigate the bladder two or three times daily with warm boric acid or ichthyol solution, 2 per cent. of either.

II. Subacute and Chronic Cystitis.—Treat the affection internally as described under acute cystitis. Irrigate the bladder every day or every other day with warm boiled boric acid solution, ʒii–iii–iv to the pint (silver nitrate, gr. ¾ may be added;= 1:10,000); or boric acid, ʒii, borax, ʒi, and sodium chloride, ʒss, to the pint; or carbolic acid solution, up to 1½ per cent.; or mercury bichloride, 1 : 100,000 in normal saline solution (ʒi ad Oi), gradually increased to 1:10,000 to 1:5000 (alternate with boric acid irrigations); or creolin, 1:1000 to 1:500; or lysol 1:1000 to 1:500; or potassium permanganate 1:15,000 to 1 : 6000 to 1:1000. The strength of the irrigating fluid should be tempered to the sensitiveness of the bladder.

In irrigating, use a glass catheter attached to a fountain syringe. The apparatus, hands, and vulva should, of course, be sterilized, the former by boiling and the latter by soap and water, followed by bichloride, 1 : 2000. The catheter may be lubricated with sterile vaseline. The flow from the fountain syringe may be regulated by pressure with the thumb and forefinger on the rubber tubing. Allow the solution to enter the bladder slowly until the patient experiences distention. Then stop the flow, and when the patient can retain the fluid no longer, remove the tubing from the catheter and allow the fluid to run out. Repeat this until three or more quarts have been used.

In obstinate cases, instillations of stronger solutions may be employed, *e.g.*, ½ to 2 ounces of warm silver nitrate solution, 1 : 1500, gradually increased, if no discomfort ensues, to 1 : 1000 to 1 : 500, to 1 : 100; or protargol, 1 dram of a 1 to 5 per cent. solution; or argyrol, 1 dram of a 25 per cent. solution. The instillations may be made every day or every other day by means of a bulb or a funnel attached to a catheter, or a piston syringe, or a Dickinson two-way catheter. The fluid should be retained as long as possible, with the hips elevated. Ashton says that antiseptic irrigations and instillations should be followed by irrigation with normal salt solution (ʒi ad Oi), to prevent poisoning.

Dudley says: "When the bladder is so painful as to resist all efforts at treatment it may be anæsthetized with 10 to 20 c.c. of a 4 per cent. solution of antipyrin, left in about twenty minutes."

If the above measures are not followed by improvement within a reasonable time, make topical applications through a cystoscope, of silver nitrate, 2 to 5 to 10 to 20 per cent., or pure carbolic acid, every three to five days, with irrigations in the intervals. Ulcers may first be curetted before cauterizing. Ashton follows cauterization by irrigation with hot normal salt solution. If no improvement follows the silver applications, try the actual cautery lightly. Continuous irrigation through a two-way catheter, for two to four hours daily, with warm boric acid solution ʒi to the pint, may be required; or perhaps continuous drainage through a vesico-vaginal fistula. The latter must be closed by an operation after the cystitis has been cured.

Chronic ulcers, not otherwise curable, should be excised through a suprapubic, extra-peritoneal incision, the bladder being distended with sterile normal saline solution or with air. "The line of excision should be well outside of the area of inflammation and the œdematous zone which often surrounds it and should extend through the entire thickness of the bladder wall. The opening thus formed is immediately closed, leaving, however, a small space through which a mushroom catheter is introduced. Through this the bladder is daily washed out with silver nitrate, starting with a 1:10,000 solution, and gradually increasing in strength until all the traces of infection are eliminated. After removing the catheter, somewhere from the tenth to the fourteenth day, the irrigations may be continued through the urethra." (Hunner.)

In obstinate cases of cystitis, three or more years may be required for a cure, excepting, of course, tuberculous cystitis in the last stages.

III. Tuberculous Cystitis.—It is susceptible of cure or amelioration. An infected kidney, if one alone is diseased, should be removed, whereby the cystitis usually disappears. Plenty of nourishing food, fresh air, and rest are of importance. Codliver oil and the hypophosphites or glycerophosphates (see Part 11) may be prescribed. Creosote, guaiacol, ichthyol, and ichthalbin have their advocates. Casper praises morphine and belladonna as valuable sedative and curative agents. Alkalies may be soothing. The application of heat is especially soothing.

In advanced cases (not in the early stages), the bladder may be instilled (never irrigated), once daily, or two or three times a week, through a small, soft-rubber cathe-

ter, with an emulsion of iodoform, ʒi to ʒi of liquid vaseline, two or three drams at a time, to be retained as long as possible; or one-half dram of the following: guiacol, 5 gm., iodoform, 1 gm., sterile olive oil, 100 gm. (Collin); or guaiacol valerianate, 25 to 100 per cent. in olive oil (Chetwood) or thallin sulphate 3 to 12 per cent. aqueous solution (Chetwood); or Gomenol oil, 15 to 30 c.c. of a 20 per cent. solution. Casper regards bichloride of mercury as the "sovereign" local remedy. He begins with instillations of 1:10,000 to 1:1000, no oftener than twice a week, less often if there is much painful reaction, and as the symptoms abate, he diminishes the strength and increases the quantity up to 50 c.c. of a 1:10,000 to 1:5000 solution. Do not inject enough to distend the bladder. Warn the patient that a painful reaction follows each instillation. Administer morphine. Discontinue the treatment "if no result is experienced after three or four applications."

Keyes, however, begins with instillations of 2 to 10 minims of a 1:25,000 solution of bichloride, and increases the strength of the solution "as far and as rapidly as the patient's symptoms permit." He says, "The treatment should excite no sharp reaction."

Casper "strongly opposes" operative methods of treating tuberculous cystitis, *i.e.*, curettement of ulcers through the cystoscope, excision, and suprapubic cystostomy. Internal urinary antiseptics and silver nitrate, boric acid, and potassium permanganate instillations do harm. Tuberculin is still *sub judice.*

Cystocele.—Gr. κύστις cyst + κήλη tumor. See Dilatation of the Urethra.

Cystospasm.—Gr. κύστις bladder + σπασμός spasm. See Bladder Irritability.

Cysts of Bartholin's Glands.—Gr. κύστις bladder. See Tumors of the Vulva.

Kidney.—See Tumors of the Kidney.

Ovaries.—See Ovarian Tumors and Cysts.

Parovarium.—See Ovarian Tumors and Cysts.

Urethra.—See Tumors of the Urethra.

Vagina.—See Tumors of the Vagina.

Vulva.—See Tumors of the Vulva.

Deciduoma Malignum.—See Chorio-Epithelioma.

Descensus Uteri.—L. *descen'dere*, to go down; *u'terus*, womb. See Prolapsus Uteri.

Dietl's Crises.—L. Gr.; κρίσις paroxysm. See Hydronephrosis.

Dilatation of the Urethra.—The whole urethra may be dilated, or only a portion (urethrocele), producing in the latter instance sacculation, usually of the middle third of the posterior wall. More or less incontinence, and perhaps frequent difficult micturition, result. The incontinence is passive and intermittent, caused by sneezing, coughing, fright, sudden change of position, etc. Cystocele may be present. The diagnosis is made by means of the sound.

Etiology.—Congenital anomaly; difficult labor, traumatism, and subinvolution; passage of a stone; forcible operative dilatation; coitus per urethram and the introduction of candles, etc.; tumor or stricture.

Treatment.—First correct any inflammation present. In urethral sacculation it may be necessary first to make an artificial urethro-vaginal fistula through the most dependent part of the sacculation and unite the urethral and vaginal mucosæ by interrupted catgut sutures, before the urethritis can be treated successfully. After the inflammation is cured, the redundant, sacculated portion of the urethra is removed, and the fistula closed. The cause of the dilatation (stricture, tumor, etc.) should, of course, be corrected. After the stitches have been removed, and the patient is out of bed, employ a Skene's pessary or Kelly's device (Fig. 88), if the pelvic floor is intact, for several months.

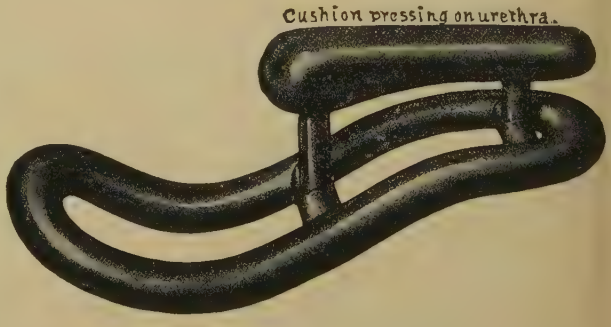


Fig. 88.—A Skene pessary, with a hard rubber pessary resting on two pillars, for the purpose of making pressure on the new urethral canal and in this way substituting the loss of the sphincter muscle. From Kelly & Noble's *Gynecology and Abdominal Surgery.* W. B. Saunders Co.

In diffuse dilatation due to subinvolution, enjoin restraint from active exercise, regulation of the bowels, bland diet (see Urethritis), and daily hot sitz-baths; and apply local astringents as in prolapse or eversion of the urethral mucous membrane (*q.v.*). Skene's pessary or Kelly's device may be worn if the pelvic floor is intact.

If incontinence of urine persists, resort to operation. A portion of the anterior wall of the vagina and posterior wall of the urethra may be excised and the wound closed by transverse silkworm-gut sutures, and a Skene pessary later employed; or the Dudley operation of advancement of the external urinary meatus to the clitoris may be preferable (cystocele and perineal laceration, if present, being first corrected); or perhaps better, the Kelly-Dumm operation described in *Surgery, Gynæcology, and Obstetrics*, April, 1914.

The faithful application of the interrupted galvanic current may be useful for the purpose of strengthening the sphincter muscle (see under Bladder Irritability.)

Diphtherial Vulvitis.—See Diphtheria, in Part I.

Displacements of the Uterus.—Anteflexion, *q.v.*

Antelocation, *q.v.*

Anteversion, *q.v.*

Descent, *q.v.*

Lateral Location, *q.v.*

Prolapse, *q.v.*

Retroflexion, *q.v.*

Retrolocation, *q.v.*

Retroversion, *q.v.*

Diverticulum of the Urethra.—L. *diverticula're*, to turn aside. See Dilatation of the Urethra.

Dysmenorrhœa.—Gr. δυς- difficult + μήν month + ῥεῖν to flow. Painful and difficult menstruation.

Etiology.—(1) Nervous or neurotic disposition, inherited or acquired (hypersensitiveness), due to or aggravated by improper hygiene, ill-health, anæmia, malaria, syphilis, gout and rheumatism, obstinate constipation, onanism (either masturbation or excessive sexual indulgence), overwork (mental or physical), sedentary habits, high living, neurasthenia, hysteria, gastric and duodenal ulcer, floating kidney, nasal affections, etc.

(2) Pelvic congestion or inflammation, due to plethora, sedentary habits, obstinate constipation, onanism, uterine displacements, uterine tumors (myomata, polypi, etc.), prolapse of the uterine appendages, varicocele and tumors of the broad ligaments, subinvolution, ovarian diseases (tumors, cystic degeneration, thickening of the capsule, etc.), over-exertion, portal congestion, pelvic inflammatory disease (embracing the uterus, tubes, ovaries, and pelvic peritoneum) chronic hyperplastic or polypoid endometritis, pelvic adhesions, chronic appendicitis, acute suppression of the menses.

(3) Obstruction, congenital or acquired, due to flexions of the uterus (especially acute anteflexion), cervical or vaginal atresia or stenosis, intra-uterine (ball-valve) polypi, blood-clots, membrane in membranous dysmenorrhœa (exfoliative endometritis), chronic endometritis.

(4) Maldevelopment or undevelopment of the reproductive organs.

Treatment.—Endeavor to ascertain and correct the cause. Enjoin proper hygiene, *i.e.*, adequate rest and exercise, sexual rest, rest in bed during menstruation, regular hours of eating and sleeping, rest before and after meals, fresh air day and night, regulation of the bowels, plain food, plenty of water, a daily warm bath before breakfast in a warm room followed by a cold spinal douche, an abdominal flannel binder, loose clothing. General massage, electricity, salt baths, Nauheim baths (*q.v.*), Turkish baths, and the rest cure, are of value in appropriate cases, if the patient can afford such luxurious treatment.

Hot vaginal douches twice daily, hot sitz-baths two or three times weekly, and ichthyol-glycerine (25 per cent.) tampons, employed during the intermenstrual periods, may be of service in congestive cases.

During menstruation, a hot water bag or mustard or turpentine stupes (*q.v.*) may be applied to the hypogastrium. A hot mustard foot-bath (about one tablespoonful to the gallon), as hot as can be borne, and hot drinks are recommended when the flow is delayed. Following the foot bath, a hot mustard poultice (*q.v.*) may be applied along the spine, and kept on for ten to twenty minutes, or until the skin is well reddened; or better, dry cups (see Cupping, in Part 1) may be applied on each side of the spinous processes in the neighborhood of tender points, fifteen to twenty minutes in each place. Electricity is recommended, the positive electrode, well moistened, being placed over the lumbosacral region, and the negative electrode moved about over the hypogastrium. It relieves pain and increases the flow.

For the so-called uric acid diathesis, is recommended on purely empiric grounds, sodium salicylate (*q.v.*) or ammoniated tincture of guaiac (*q.v.*) for one week before menstruation. The bowels should be opened thoroughly, say with a bottle of liq magnesii citratis (Ashton), at or just before the onset of menstruation.

Sedative Drugs:

℞ Apiolis, capsulas No. 30., aa ℥iii–vi

Sig.—One capsule, t.i.d.p.c. for one week before and during the period.

℞ Fluidextracti hydrastis Canadensis... ℥ss

Sig.—Twenty-five drops in a wineglassful of water twice a day for one week before and during the flow.

℞ Tincturæ pulsatillæ..... ℥ss

Sig.—Five minims in water t.i.d., for one week before the flow.

℞ Tincturæ gelsemii..... ℥ss

Sig.—Ten drops, four times daily, begun several days before the expected flow, and continued throughout the period.

℞ Tincturæ cannabis indicæ..... ℥ss

Sig.—♏xx in water every three hours.

℞ Tincturæ hyoscyami..... ℥ss

Sig.—♏x–xxx in water t.i.d.

℞ Tincturæ belladonnæ..... ℥ss

Sig.—Ten to thirty drops in water t.i.d., or every three or four hours.

℞ Atropinæ, gr. 1/100, t.i.d., about two days before the expected flow. Regulate the dose according to the effects, the occurrence of dryness and itching of the skin (see also Part 11) calling for lessening of the dose. Atropine diminishes the irritability of the autonomic nerve endings in the uterus, and should be especially indicated.

℞ Codeinæ, gr. ¼, every four hours.

℞ Codeinæ sulphatis..... gr. vi (gr. ¼ per pill)
Extracti cannabis indicæ, gr. iii (gr. ⅛ per pill)
Extracti hyoscyami..... gr. vi (gr. ¼ per pill)
Hydrastininæ hydrochloridi..... gr. iv (gr. ⅙ per pill)
Oleoresinæ capsici..... ♏ii (♏½ per pill)
Fiant pilulæ No. 24.

Sig.—One pill every three or four hours.

℞ Pulveris ipecacuanhæ et opii,
Acetphenetidinæ vel antipyrinæ, aa..... gr. v.
Ft. chart. talis No. 2.

Sig.—One powder, repeated if necessary.

℞ Acetphenetidinæ vel antipyrinæ..... gr. v
Mitte talis chartulæ No. 6.

Sig.—One powder every half-hour until relieved.

℞ Acetphenetidinæ..... gr. xl (gr. v per dose)
Spiritus frumenti..... ℥ii

M. Sig.—Two drams in hot water every half to one hour for from three to six doses.

℞ Acetanelidi..... gr. ii
Sodii bicardonatis..... gr. viii
Caffeinæ..... gr. ss
Ft. talis chart. No. 6.

Sig.—One powder every hour for three hours.

℞ Potassii vel sodii bromidi ℥ii (gr. xv per dose)
Tincturæ asafœtidæ vel valerianæ..... ℥iv (℥ss per dose)
Aquæ, q.s., ad..... ℥ii

M. Sig.—One dessertspoonful in hot water every four hours.

℞ Tincturæ gelsemii..... ℥iii
Tincturæ cannabis indicæ ℥iii
Tincturæ cardamomi compositæ, q.s., ad... ℥iii

M. Sig.—One dram t.i.d. and at night. "Begin several days before the flow and continue for several days" ("valuable"). (Bandler.)

℞ Tincturæ opii camphoratæ.. ℥i (℥i per dose)
Tincturæ zingiberis..... ℥i (℥i per dose)
Spiritus chloroformi..... ℥ii (♏xv per dose)
Syrupi acaciæ..... ℥ss
Aquæ menthæ piperitæ, q.s., ad..... ℥iv

M. Sig.—One tablespoonful in water as required for cramp. (B. C. Hirst.)

℞ Amylis nitritis..... ℥i

Sig.—Three to five drops on a handkerchief by inhalation, for severe pain.

℞ Potassii bromidi,
Chlorali hydrati, aa.... ℥iv (aa ℥ss per dose)
Aquæ..... ℥iv

M. Sig.—Two tablespoonfuls as an enema, as required for pain.

℞ Spiritus chloroformi,
Spiritus ammoniæ aromatici,
Tincturæ lavandulæ compositæ,
Syrupi zingiberis, aa.... ℥i (aa ♏xx per teasp.)

M. Sig.—One or two teaspoonfuls in a cupful of hot water, as required for cramp. Useful in ordinary cases.

℞ Tabellæ thyroidei glandulæ siccæ, No. 30, aa..... gr. iii

Sig.—One tablet 3 to 5 times daily, for 8 to 10 days before the onset of menstruation.

℞ Solut. cocainæ, 2 to 4 per cent. Apply to the nasal mucous membrane over Fleiss's "genital spots": the tuberculum septi and anterior inferior turbinals.

Alcohol and morphine should be used with discretion.

If other measures are unsuccessful, dilatation and curettage may be resorted to, but it often fails. After curetting and flushing the uterus, Kelly packs it tightly with a strip of gauze, which is removed at the end of two days. The patient is kept in bed one week, and in the same room fourteen days. Says Kelly: "When dysmenorrhœa returns after a few years or months of comfort, we are justified in recommending a second operation." Says Hirst: "By thoroughly dilating the cervix with the dilators in ordinary use (to 1½ inches on the scale), including Cleveland's (to 70 to 90 mm. on the scale), by a curettage with Sims' and Martin's curettes (the latter for the fundus and cornua; and the uterine cavity irrigated through a two-way catheter), and by leaving, if possible, the four-branched metranoikter, or if not, the two-branched metranoikter in the uterus for twenty-four hours (the vagina is packed with gauze; 10 per cent. of the patients require morphine; the uterus is afterward irrigated through a Fritsch-Bozeman two-way catheter), the percentage of cures in mechanical dysmenorrhœa and sterility can be more than doubled." Dysmenorrhœa associated with

an infantile uterus is curable by pregnancy (see also Anteflexion).

Membranous dysmenorrhœa is characterized by the expulsion of the whole or part of the lining membrane of the uterus. (Make a microscopic examination to distinguish it from a vaginal cast, occurring in exfoliative vaginitis, or a decidual cast, occurring in extra-uterine pregnancy and in ordinary abortion). Its treatment is unsatisfactory and the prognosis is not good. Thorough curettage may be performed a few days before menstruation followed by the application of a saturated solution of iodine in 95 per cent. carbolic acid. Bandler recommends the use of superheated steam (atmocausis: Gr. *ἀτμός* steam + *καῦσις* burning) following curettage. He also recommends the prolonged administration of ovarian extract and potassium iodide. Ashton recommends equal parts of fl. ext. black haw and fl. ext. hydrastis, ℥xxx twice daily, beginning eight days before menstruation and continuing during the flow. Maternity sometimes effects a radical cure.

Dyspareunia.—Gr. *δυσπάρευνος* badly mated. Difficult or painful coitus. See Vaginismus.

Dysuria.—Gr. *δυς-* ill + *οὖρον* urine. Painful or difficult urination.

Causes.—Urethritis; trigonitis; cystitis; vesical distomiasis; vesico-urethral fissure; pyelitis and pyelonephritis; urethral caruncle; urethral stricture; urethral dilatation; urethral tumors; prolapse or eversion of the urethral mucous membrane; vesical calculus or foreign body; vesical tumors; vesical tuberculosis; neuroses of the bladder; uterine displacements; fibromyoma of the uterus; distended colon; pelvic inflammatory disease; masturbation or excessive coition; excessive acidity of the urine; pyuria; crystals in the urine (see Nephrolithiasis); too high or too low specific gravity; hemorrhoids; abdominal pelvic operations; vaginismus; pregnancy; oxyuriasis; anal fissure and other rectal diseases; irritating ingesta, *e.g.*, ginger, radishes, spices, turpentine, salicylates, cantharides, quinine, urotropin, etc.; bladder irritability (*q.v.*).

Echinococcus or Hydatid Cyst of the Kidney.—Gr. *ἐχῖνος* hedgehog + *κοκκος* berry; *ὑδατίς* vesicle; *κύστις* bladder. See Tumors of the Kidney.

Ectopic Gestation.—Gr. *ἔκτοπος* displaced; L. *gesta'tio*, pregnancy. See Extra-Uterine Pregnancy.

Ectropion of the Intracervical Mucosa.—Gr. *ἐκ* out + *τρέπειν* to turn. See Eversion of the Intracervical Mucosa.

Edema.—See Œdema.

Elephantiasis.—Gr., elephant disease.—See Part 5.

Emphysematous Vaginitis.—Gr. *ἐμφύσημα* inflation with air. See Vaginitis.

Enchondroma Vesicæ.—Gr. *ἐν* in + *χόνδρος* cartilage + *-ωμα* tumor; L. *vesic'a*, bladder. See Tumors of the Bladder.

Enchondroma Vulvæ.—See Tumors of the Vulva.

Endocervicitis.—See Cervicitis and Endocervicitis.

Endometritis.—Gr. *ἔνδρον* within + *μήτρα uterus* + *-ιτις* inflammation. Endometritis acute or chronic, with the exception of puerperal infection, is as rare as cervicitis and endocervicitis (*q.v.*,) are common.

Acute inflammation of the endometrium, which is usually accompanied by more or less involvement of the uterine parenchyma is manifested by local pain, tenderness, and distention, a patulous os, sometimes the sudden cessation of an existing leucorrhœal discharge, which later increases, perhaps rectal and vesical tenesmus and frequent urination, pyrexia, rapid pulse, perhaps chills, headache, and perhaps nausea and vomiting. The causes are gonorrhœa, infectious diseases (measles, scarlet fever, mumps, typhoid fever, diphtheria, smallpox, etc.), and infection following abortion, labor, cervical laceration, operations and intra-uterine manipulations. Gonorrhœa, while it may infect the endometrium, often produces no symptoms here, but manifests itself in the tubes.

Chronic endometritis is manifested by a leucorrhœal discharge, (not thick and tenacious like a cervical discharge, but more serous; a vaginal discharge is "curdy or milky or creamy"), local pain and sense of pressure, perhaps backache, occipital headache, indigestion, etc., menorrhagia or metrorrhagia, dysmenorrhœa, perhaps rectal and vesical tenesmus and frequent urination. Metritis (*q.v.*), is, no doubt, always present.

Several varieties of chronic endometritis are recognized: (1) exfoliative endometritis (membranous dysmenorrhœa, *q.v.*) (2) senile endometritis, characterized by uterine atrophy and an irritating purulent discharge, or in the presence of cicatricial stenosis, a pyometra or pyophysometra, often cervical erosions, and erosions and cicatricial adhesions in the vaginal vault, perhaps anæmia and cachexia due to toxic absorption; (3) polypoid endometritis, causing hemorrhage; (4) subinvolution or hypertrophic and hyperplastic changes following abortion, labor, ectopic gestation, submu-

cous myoma, cancer, sarcoma, retroflexion, cervical laceration, pelvic tumors, pelvic adhesions, chronic pelvic congestion (*q.v.*), chronic constipation, restrictive clothing, sexual excesses, suppression of menstruation following exposure to cold, acquired cervical stenosis, tubal disease; (5) decidual endometritis, manifested by a purulent discharge, bleeding, and pain during pregnancy, which is apt to result in abortion, "with a firmly adherent placenta"; (6) tuberculous endometritis, recognized by microscopic examination of the uterine scrapings; the tubes, when involved, are felt to be indurated and nodular; (7) catarrhal endometritis, due to circulatory or excretory disturbances occurring in disorders of the heart, lungs, liver, and kidneys, anæmia, tuberculosis, gout and rheumatism, constipation, etc.

The bacteria most frequently found in both acute and chronic endometritis are the streptococcus, staphylococcus, and gonococcus; less frequently, the colon bacillus, pneumococcus, various saprophytic organisms, tubercle bacillus, typhoid bacillus, and diphtheria bacillus.

Treatment.—A. Acute Septic or Sapræmic Endometritis.—Under careful asepsis remove all putrefying material from the uterine cavity with the finger, curettement forceps, and dull curette, taking care not to inflict traumatism; then irrigate thoroughly and copiously with hot sterile water, or bichloride solution, 1 : 8000 to 2000, or formaldehyde solution, 1: 4000, or lysol, 1 per cent., or dilute acetic acid, ʒii to the quart of water, followed by normal saline solution (ʒi ad Oi). Then paint the vaginal vault with tincture of iodine, and insert a boroglyceride tampon attached to a string, which should be removed at the end of twelve hours. Short hot vaginal douches may be employed twice daily, unless they increase the fever. After the uterus has once been emptied, it should be left severely alone. The patient should be placed in a semi-sitting posture to promote drainage. Some regard with disfavor any intra-uterine or vaginal treatment. Prescribe salines, an ice-bag or heat to the hypogastrium, and concentrated liquid and soft diet. Administer fluid extract of ergot, ♏xv–xxx in water, or ergotol, ♏xv, or ergotin, gr. ii, four to six times daily, or pituitrin (*q.v.*), to contract the uterus and thereby limit the invasion of microörganisms (see also Metritis; Pelvic Inflammatory Disease; and Puerperal Infection).

B. Acute Gonorrhœal Endometritis.—Prescribe rest in bed in a semi-sitting posture, salines (*q.v.*), an ice-bag or heat to the hypogastrium, and restricted diet. The discharge should be caught on vulvar pads of absorbent cotton or gauze, and burned. After the more acute symptoms have subsided (three or four days), or even sooner, the uterus may be dilated, irrigated with hot bichloride solution, 1 : 2000, through a two-way catheter, followed by normal saline solution, and then swabbed with pure carbolic acid or a concentrated solution of iodine in 95 per cent. carbolic acid. Thereafter the vagina is irrigated twice daily with permanganate solution, 1 : 4000. The value of intra-uterine treatment, however, seems questionable. (See Gonorrhœa).

C. Chronic Endometritis.—Attend to the cause. Enjoin adequate rest and exercise, the avoidance of prolonged standing and slow walking, fresh air day and night, loose clothing supported from the shoulders, regular hours of eating and sleeping, rest before and after meals, regulation of the bowels (saline laxatives, for pelvic congestion), sodium phosphate in lots of water and the restriction of animal foods in defective kidney elimination (in which the urea and total solids, etc., are diminished: see Urinalysis), nutritious food, iron and bitter tonics for anæmia (see Part 11, for drugs).

℞ Elixiris ferri, quininæ, et strychninæ phosphati..... ʒiv
Sig.—One teaspoonful in water, t.i.d.p.c.

℞ Tincturæ nucis vomicæ..... ʒi (♏x per dose)
Tincturæ cinchonæ compositæ..... ʒxi
M. Sig.—Two teaspoonfuls t.i.d. (S. Theobald.)

Prescribe digitalis for the heart, if required. Try thyroid extract cautiously for anæmic, fat, flabby women.

Dilate the uterus, curette the endometrium thoroughly by means of Sims's and Martin's sharp curettes, the latter for the fundus and cornua, irrigate the uterine cavity with hot water or carbolic acid solution, 1 to 2 per cent., dry with gauze, and apply, on a cotton-wound applicator tincture of iodine, or silver nitrate, 5 to 10 per cent., or a saturated solution of iodine in 95 per cent. carbolic acid. Then apply close to the cervix a tampon soaked in glycerite of boroglycerine attached to a string, which should be removed at the end of twenty-four hours, followed by a douche Instruct the patient to douche the vagina twice daily for two weeks with hot boric acid solution, ʒi to the pint, or the following:

℞ Acidi borici ..... ℥vi
Acidi carbolici,
Pulveris aluminis exsiccati, aa ..... ℥i
Olei gaultheriæ ..... ℥i
Olei menthæ piperitæ ..... ℥ss
M. Sig.—A tablespoonful in a gallon of water. (H. A. Kelly.)

Repeat the tamponade two or three times a week.

If the uterus should be accidentally perforated with the curette, one may perform celiotomy at once and close the rent, or else, if the rent is small, pack the vagina and give ergot, both internally and hypodermically, in small repeated doses, in order to keep the uterus contracted. The occurrence of peritonitis demands celiotomy.

Polypoid, senile, and exfoliative endometritis are all treated as described above (see also senile vaginitis; and membranous dysmenorrhœa).

Tuberculous endometritis calls for hysterectomy.

Radium therapy (*q.v.*) is particularly efficacious in the control of hemorrhage.

Enteroptosis.—Gr. ἔντερον bowel + πτῶσις fall. See Splanchnoptosis in Part 1.

Epistaxis, Renal.—See under Hæmaturia.

Epithelioma Vulvæ.—Gr. ἐπί on + θηλή nipple + -ωμα tumor; L. *vul'va*. See Tumors of the Vulva.

Erosion of the Cervix.—See Cervical Erosion.

Erysipelas of the Vulva.—See Erysipelas, in Part 5.

Essential Renal Hæmaturia.—L. *essential'is*, inherent or idiopathic; *ren*, kidney. See under Hæmaturia.

Eversion of the Intracervical Mucosa.—L. *e*, out + *ver'tere*, to turn; *in'tra*, within; *cer'vix*, neck; *mu'cus*.

Etiology.—Cervical laceration (*q.v.*); cervicitis and endocervicitis (*q.v.*); chronic pelvic congestion (*q.v.*); congenital defect of the external os.

Treatment.—Correct the cause.

Eversion of the Urethral Mucous Membrane.—L. *e*, out + *ver'tere*, to turn; Gr. οὐρήθρα; L. *mu'cus*; *membra'na*. A rare condition, usually causing dysuria.

Etiology.—Trauma during labor; severe urethritis; overdilatation of the urethra; traction exerted by a tumor; vesical tenesmus or straining (occurring in cystitis, vesico-urethral fissure, stone, tumor of the bladder); rectal tenesmus (occurring in anal fissure, hemorrhoids); severe coughing; general debility.

Treatment.—Correct the cause. Operative measures are usually required, even after the cause has been removed, but conservative measures may be tried first: Put the patient to bed for three or four weeks on a bland diet (see under Urethritis) and keep the bowels loose with salines (Part 11). Employ daily hot sitz-baths or hot local applications. When the œdema has subsided, reduce the prolapse, and then inject, by means of a reflux catheter, or swab with a cotton-wound applicator, astringent solutions, *e.g.*, alum, gr. x to the ounce; or tannic acid, gr. v–x to the ounce; or use suppositories containing alum, gr. ii–iv, tannic acid, gr. ii–iii, or acetate of zinc, gr. ii–iv. Twice a week, paint with silver nitrate, gr. ii to the ounce.

If no benefit results after two or three months, operate and excise the prolapsed mucous membrane, and stitch the edges of the mucosa to the margin of the meatus by fine sutures. If cicatricial contraction of the external meatus later occurs, correct it by forcible dilatation (after Ashton: *Practice of Gynæcology*, *q.v.*, for the operative procedure).

Dudley says: "The treatment of extensive prolapse from any cause is to return the displaced mucosa, if possible; and if relief does not follow, it is well to make a small vesico-vaginal fistula, and thereby give the urethra perfect rest. If this measure fails, the prolapse may be cured permanently by making what Emmet calls a buttonhole slit in the urethro-vaginal wall and drawing through this the excessive mucosa and cutting it away. The sutures for closure of the opening are introduced before the excision. During the placing of the sutures a sound should be in the urethra."

Excrescences.—L. *ex*, out + *cres'cere*, to grow. See Verrucæ.

Exfoliative Cystitis.—L. *ex*, out + *fo'lium* leaf. See Cystitis.

Endometritis.—See Endometritis.

Vaginitis.—See Vaginitis.

Exostrophy of the Bladder.—See Bladder, Exostrophy of the.

Extra-Uterine Pregnancy.—L. *ex'tra*, outside of; *ut'erus*, womb; *præg'nans*, with child. "When any woman after puberty and before the menopause, who has menstruated regularly and painlessly, goes four, five, six, eight, ten, fifteen, to eighteen days over the time at which menstruation is due, sees blood from the vagina differing in quality, color, quantity or continuance (decidual membrane) from her usual menstrual flow, and has pains, generally severe, in one side of the pelvis or the other, or possibly in the hypogastric region, ectopic gestation may be presumed" (Philander Harris quoted by Bandler). Tubal preg-

nancy often follows long periods of sterility. Significant symptoms are the occurrence of pain, rapid pulse, and faintness, with little or no elevation of temperature, when the patient is on her feet, which subside following rest in bed. Examine for an enlarged and very sensitive tube. The occurrence of abortion or rupture (with sudden acute pain, collapse, abdominal distention due to hemorrhage, and a pelvic hæmatocele detected by bimanual palpation) may be the first indication of tubal pregnancy. In tubal abortion, as distinguished from rupture, the patient, as a rule, soon rallies and gradually recovers. Occasionally, secondary abdominal pregnancy continues after the occurrence of rupture, and at term false labor occurs, followed by a gradual decrease in the size of the abdomen.

Etiology.—Chronic salpingitis; tubal stenosis, congenital or acquired; adhesions constricting or kinking the tube; tubal diverticula; accessory tubal canal; accessory ostia; exaggerated tubal tortuosity; fibromyomata; broad ligament tumors; external transmigration of the ovum, twins, or an unusually long tube, under which circumstances the ovum becomes so large before it can reach the uterine cavity, that it is held in the tube; etc.

Treatment.—Operate as soon as the condition is diagnosed. Penrose says, operate without delay for all gross lesions of the tubes.

In the presence of abortion or rupture, it is probably wiser to operate at once, instead of waiting for reaction from the shock and hemorrhage. After the bleeding vessels have been secured, infuse two pints or more of normal salt solution (0.9 per cent.) under the breasts, and leave some in the abdomen. Take care to remove all blood-clots from the pelvis. Gum-salt solution (Part 11) intravenously (*q.v.*) is reputed to be dangerous. Blood transfusion (*q.v.*) is best.

In cases in which the acute symptoms have subsided when the patient is first seen and a hæmatocele is present, the patient may be kept under observation in bed and no interference attempted unless the hæmatocele steadily increases in size or suppurates, when it should be evacuated through the vaginal fornix and the resulting cavity packed with gauze.

In those rare cases in which gestation has advanced beyond the fourth or fifth month and the fœtus is alive, and in those cases in which, after rupture, pregnancy continues the removal of the placenta should not by any means be attempted, for fear of uncontrollable hemorrhage. In these cases, incise the sac with great care to avoid the placenta, remove the fœtus, stitch the sac to the abdominal wound, establish gauze or tubular drainage, and leave the placenta to slough out.

Falling of the Womb.—See Prolapsus Uteri.

Fallopian Tubes, Inflammation of the.—Fallopius, an Italian anatomist, 1523–1562. See Salpingitis.

Fallopian Tubes, Tuberculosis of the.—See Tuberculosis of the Genital Organs.

Fibroid Tumors of the Uterus.—L. *fi'bra*, fibre + Gr. *εἶδος* form; L. *tumor*, swelling. See Fibromyoma Uteri.

Fibroma Urethræ.—L. *fi'bra*, fibre + Gr. *-ωμα* tumor. See Tumors of the Urethra.

Vesicæ.—L. *vesi'ca*, bladder. See Tumors of the Bladder.

Vulvæ.—See Tumors of the Vulva.

Fibromyoma Uteri.—L. *fi'bra*, fibre + Gr. *μῦς* muscle + *-ωμα* tumor; L. *ut'erus*, womb. Fibromyoma of the uterus is characterized by enlargement of this organ, which is usually irregularly nodular, hemorrhage (*q.v.*,) particularly pronounced in the submucous myoma, especially the pedunculated variety, and various other symptoms caused by pressure and traction upon neighboring structures, *e.g.*, frequency of urination, dysuria, vesical tenesmus, retention of urine, due to pressure upon the bladder or urethra; constipation, hemorrhoids, mucous diarrhœa, rectal tenesmus, due to pressure upon the rectum; hydronephrosis, due to compression of the ureter. There is apt to be a moderate amount of local pain and discomfort, perhaps displacement, sometimes leucorrhœa.

The period of sexual maturity, from puberty to the menopause, and probably heredity are etiological factors.

Treatment.—Treatment is called for only in the presence of symptoms. Regulate the bowels, see that the clothing is worn loose, and build up the general strength by correct hygiene, *i.e.*, adequate rest and exercise, frequent bathing, fresh air day and night, regular hours of eating and sleeping, rest before and after meals, an abundance of good food, and tonics (*e.g.*, elix. ferri, quin. et strych. phos., ℥i in water, t.i.d.), if required. For the relief of pain, instruct the patient to lie upon her abdomen or side as much as possible. Tincture of cannabis indica and potassium bromide (see Part 11) are recommended. If the tumor is wedged in the pelvis, release it by manipula-

tions and traction upon the cervix, with the patient in the knee-chest posture. To control hemorrhage, enjoin rest in bed during the flow, with an ice-bag to the hypogastrium, and administer ergot and hydrastis, in sufficient dosage to control the bleeding. Tight packing of the vagina or uterus with gauze, renewed every forty-eight hours until the flow has ceased and also thorough curettement are very efficacious. Saline purgatives, for the purpose of depleting pelvic congestion, are particularly useful just before the menstrual period. (Penrose.) Pituitary extract should be of service.

About 80 per cent. or more of cures are effected by means of radium (*q.v.*), or X-ray therapy (*q.v.*). In full dosage these agents produce atrophy of the uterus and ovaries and a resulting artificial menopause. Patients under forty years of age should not, as a rule, be irradiated. Abbe uses from 50 to 100 milligrams of radium in celluloid holders of the size and thickness of an ordinary goose-quill, and 10 cm. long. Two of these may be joined end to end by means of two or three turns of chiffon wrapping sealed with collodion, if the uterine canal is very long. The radium is applied for two hours; and if, after two months, the hemorrhage recurs, the treatment is repeated. An examination every six months will reveal a diminution of the tumor.

Kelly and Burnam's technique is as follows: First the uterus is curretted and any pedunculated growths removed with a polyp forceps. Then 300 to 500 millicuries of emanation covered with a rubber cot on the end of a sound is introduced into the uterus and allowed to remain for about three hours. Nausea may follow for twenty-four hours and abdominal tenderness for several days, and sometimes a leucorrhœal discharge, for several weeks. If one treatment is not sufficient a second may be employed after several months, or one or more grams of radium, suitably filtered (*q.v.*) may be applied over various areas of the abdomen for several hours. The radium tubes are sterilized in formalin, 40 per cent. for at least twenty minutes. A string is attached to the tube to facilitate withdrawal. To prevent expulsion of the tube, the vagina may be packed with sterile gauze.

In employing the X-rays, Bordier gives nine sittings on successive days in the intermenstrual period, over the central region, and the same over each lateral region, with an interval between each series of exposures of twenty to twenty-five days, repeating this three or four times. High tubes (8° to 10° Benoist) are used. A 3.5 mm. aluminum filter is always used in the median area, and ½ to 3 mm. in the lateral areas. The median filter is connected to the earth by means of a wire. Bordier's radiometer is used to measure the dose (5H or Holzknecht = 10X, unit of Kienböck quantimeter = Sabouraud tint "B"). The pastille is stuck on the filter and is compared with the scale by the light of a match or candle. The X-ray bulb is always placed the breadth of the hand (the four fingers) from the filter. The time required to obtain the dose of 5H should not exceed five or six minutes. During irradiation of the lateral or iliac areas, the median abdominal area is protected by a strip of lead extending at least the breadth of two fingers to each side of the middle line.

Conditions contraindicating X-ray treatment and demanding hysterectomy or myomectomy are as follows:

1. Pedunculated submucous myomata or fibroid polypi.
2. Carcinoma.
3. Gangrene or suppuration or softening.
4. Acute incarceration of the bladder or other complication demanding surgical interference.

A pedunculated submucous myoma may be twisted from its attachment or cut off with curved scissors, followed, if there is hemorrhage (which is not alarming), by swabbing the uterine cavity with tincture of iodine and carbolic acid, equal parts (the vagina being protected with gauze), or by irrigating with hot water, or packing with gauze. If dilatation of the cervix affords inadequate approach, it may be necessary to make bilateral cervical incisions up to the vaginal junction, or a median incision through the anterior wall of the uterus. If the polyp is large, it may first have to be removed in pieces before severing the pedicle (beware of snipping off an inverted portion of the uterus). After removing the polypus, curette the uterine cavity, irrigate with hot normal saline solution (℥i ad Oi), and pack with gauze, which should be removed the next day.

Thereafter give daily vaginal douches and keep the patient in bed a week.

Fibromyoma Vaginæ.—See Tumors of the Vagina.

Vulvæ.—See Tumors of the Vulva.

Fibrosis Uteri and Arteriosclerosis.—L. *fibra*, fibre; *uterus*, womb; Gr. *ἀρτηρία* artery + *σκληρός* hard. See Menorrhagia and Metrorrhagia.

Fig Warts.—See Verrucæ,

Fissure, Vesico-Urethral.—See Vesico-Urethral Fissure.

Fistulæ, Pelvic.—L. *fis'tula*, pipe; *pel'vis*, basin. (Consult Gynæcological textbooks.)

Fistula, Renal.—L. *fis'tula*, pipe; *ren*, kidney. **Etiology.**—Suppurative nephritis secondary to ureteral obstruction (see Hydronephrosis); when post-operative and lasting longer than several weeks, it is due to ureteral occlusion, stone, or suture, to inefficient drainage, tuberculosis, tumor, loss of substance of the pelvis or ureter, fecal fistula, or low general vitality.

Treatment.—Endeavor to restore the patency of the ureter. If this is impossible, remove the kidney if the other is functionally active (see Urinalysis). If this is impracticable, tie the renal vessels through an abdominal incision.

Flat Condylomata.—Gr. κονδύλωμα wart. See Verrucæ,

Flatus, Vaginal.—L. *fla'tus*, gas. See Garrulity of the Vulva.

Floating Kidney.—See Splanchnoptosis, in Part 1.

Follicular Vulvitis.—L. *follic'ulus*, little bag. See Vulvitis.

Foreign Bodies in the Bladder.—See Vesical Calculus and Foreign Bodies.

Frequent Urination.—See Polyuria.

Fungus Disease of the Vagina.—L. See Vaginitis.

Fungus Disease of the Vulva.—See Vulvitis.

Gangrene of the Vulva.—L.; Gr. γάγγραινα mortification; L. *vul'va*. **Etiology.**—Traumatism due to labor, corrosives, etc.; hæmatoma; œdema; vulvitis; in children, the eruptive fevers, especially measles, poor nutrition and bad hygiene (noma pudendi: usually fatal).

The Prognosis is serious.

Treatment.—Remove with the knife or destroy with the actual cautery the affected tissues well outside the waxy zone. If the knife is used, follow it with the cautery or with pure nitric or carbolic acid or zinc chloride, 8 per cent. solution. Then blow on powdered iodoform, and cover with carbolized oil, 3 per cent. Thereafter, use frequently day and night, antiseptic sprays and washes, especially equal parts of alcohol and water. Formalin, 1 per cent., potassium permanganate, gr. iss in ℥ss, or iodoform is used to destroy the horrible odor.

Administer concentrated liquid food, predigested if need be (see Part 11), and whiskey or brandy at frequent intervals (every two or three hours). Quinine (*q.v.*) and the perchloride of iron (see Part 11) are recommended. The patient should be isolated.

Garrulity of the Vulva; Vaginal Flatus.—**Etiology.**—Relaxed vaginal outlet due to trauma or general emaciation; recto-vaginal fistulæ; "sloughing uterine or vaginal tumors."

Treatment.—Treat the cause.

Gastroptosis.—Gr. γαστήρ stomach + πτῶσις falling. See Splanchnoptosis in Part 1.

Genital Tuberculosis.—See Tuberculosis of the Genital Organs.

Gestation, Ectopic.—See Extra-Uterine Pregnancy.

Glenard's Disease.—See Splanchnoptosis, in Part 1.

Gonorrhœa.—Gr. γονή semen + ῥεῖν to flow. A local, sometimes systemic, contagious pyogenic infection of mucous and serous membranes, caused by the gonococcus of Neisser, with an incubation period of from one to eight days or longer, and an acute course of about six weeks, with a tendency to chronicity. The onset may be accompanied by chilliness, fever, rapid pulse, burning on urination, pelvic pains, and a purulent leucorrhœa, and bubo or arthritis may occur. In most cases, however, the disease begins insidiously. The flea-bite redness about the orifices of Bartholin's ducts is characteristic. The diagnosis is made by the demonstration of gonococci in the secretions. The urethra may be stripped through the vagina to obtain pus.

Gram's method of staining is as follows (Webster): Place a drop of the pus on one end of a clean dry slide, and with a second slide held at an angle of 45° to the first one, touch the drop of pus, and when the latter has spread out by capillarity along the edge of the second slide, draw the latter along the first slide, still maintaining the angle of 45°, and exerting very little pressure. A cigarette paper may also be used as a spreader. Fix the smear thus made by passing it several times through the flame, allow it to cool, then cover with a solution consisting of 84 c.c. of aniline water (water saturated with aniline and filtered) and 16 c.c. of a saturated alcoholic solution of gentian violet. After one to three minutes, pour off the stain, wash in water, and without drying, cover with a solution consisting of 1 gram of iodine and 2 grams of potassium iodide dissolved in 300 c.c. of water. After one-half to one minute, wash in water, and treat with 95 per cent. alcohol until all the color is removed. Now wash in water and cover with a dilute aqueous solution of

safranine as a contrast stain. Allow the latter to act for only a few seconds, then wash off with water, dry between folds of filter-paper, and examine under an oil-immersion lens. Gram-positive organisms, *i.e.*, those not decolorized (tubercle bacillus, smegma bacillus, diphtheria bacillus, pneumococcus, streptococcus, staphylococcus, and various saprophytic cocci) are stained deep blue, while the Gram-negative organisms (gonococcus, meningococcus, micrococcus catarrhalis, influenza bacillus, typhoid bacillus, colon bacillus, Koch-Weeks bacillus, and the Morax-Axenfeld bacillus) and the bodies of the pus-cells take the red safranine stain. (Webster.)

Treatment should be continued until the discharges are free from gonococci. Six to twelve weeks or longer are required for a cure, except in invasion of the uterus and tubes.

Treatment.—In the acute phase of the infection, put the patient to bed and keep her there for a couple of weeks. A perfectly bland diet, copious water drinking, and a daily saline purge (see Part 11) should be prescribed. Forbid alcohol, coffee, tea, ginger ale, lemonade, carbonated beverages, fruit, acid foods, condiments, spices, pepper, mustard, radishes, horse-radish, salads, sauces, pickles, salty foods, rhubarb, tomatoes, asparagus, shellfish, smoked and salted meats, preserved fish, cheese, herring, greasy or fried foods. Allow no coitus.

For painful urination, prescribe the following:

℞ Potassii acetatis vel citratis ʒi (gr. xx per dose)
Tincturæ hyoscyami..... ʒi (♏xx per dose)
Aquæ, q.s. ad..... ʒiv

M. Sig.—One teaspoonful in one-third tumbler water every 3 hours. (H. A. Kelly.)

℞ Potassii citratis..... ʒii–vi (gr. viss–xx per dose)
Olei santali..... ʒiv–vi (♏xiii–xx per dose)
Syrupi acaciæ..... ʒi
Aquæ menthæ piperitæ, q.s. ad ʒiii

M. Sig.—Teaspoonful in wineglassful of water after meals. (H. Cabot.)

A rectal suppository containing ext. opii, gr. i–ii, and ext. belladonnæ, gr. ¼ may be required.

The genitals should be bathed 3 or more times a day with boric acid solution, ʒi to the pint, or lysol, 0.5 to 1.0 per cent., or bichloride of mercury, 1 : 5000, and clean pads worn constantly, the soiled ones being burnt. If the vagina and cervix are obviously involved, hot potassium permanganate irrigations (1 : 4000) may, perhaps, be employed; but otherwise vaginal douches are contraindicated. Frequent hot sitz-baths are beneficial. Multiple punctures are recommended for marked œdema. Employ no local urethral or cervical treatment.

In the subacute and chronic stages, or as soon as the acute symptoms have subsided, employ direct local treatment, as follows: with the patient in the semiprone or Sims posture (on the left side and chest, the left arm along the back, and the right thigh flexed), and using Sims' small speculum, wipe the vulva and vagina thoroughly first with cotton dipped in warm water, then with dry cotton. Then swab the cervical canal several times, up to but not past the internal os, with a cotton-wound applicator dipped in 10 per cent. silver nitrate solution (or 10 per cent. protargol). Slight dilatation with Hanks's dilators may or may not be necessary. Then swab every nook and corner of the entire vagina in the same way. Then smear the mucous membrane with vaseline and insert two packs of absorbent cotton, with strings attached, to prevent the formation of adhesions. Then, if the urethra is infected, after the patient has urinated, and the urethra has been milked or massaged through the vagina, insert up to but not into the neck of the bladder a No. 8 or 9 Kelly endoscope, or a cystoscope, or Skene's bivalve urethral speculum, and swab the entire urethra with 3 to 5 per cent. silver nitrate solution, or 5 to 10 per cent. protargol, or 25 per cent. argyrol, "as it rolls into the lumen of the endoscope during its withdrawal." If necessary, the urethra may first be anæsthetized by applying for five minutes, on a cotton-wound applicator, a solution of eucaine, 2 per cent., or stovaine, 1 per cent., or alypin, 5 per cent. If desired, one may flush the urethra before applying the silver, with hot normal salt solution (ʒi ad Oi) through Skene's reflux urethral catheter. A medicine dropper may be used instead of the urethroscope and cotton-wound applicator. Repeat the urethral treatment once or twice a week.

The vaginal packs should be removed after forty-eight hours' rest in bed, and the vagina douched. The above treatment may have to be repeated several times at intervals of from two to four weeks, first, however, healing vaginal congestion with ichthyol-glycerine, ʒi ad ʒi.

In cases which cannot be treated as above described, one may employ bi-daily douching with hot potassium permanganate solution, 1 : 1500, or creolin, 0.5 per cent., or one or two vaginal suppositories at bed-

time, consisting of boro-glyceride, gelatine, and protargol, 2 per cent., a napkin being worn. (Chiefly from H. A. Kelly.)

Horwitz treats chronic gonorrhœa as follows: the urethritis is treated the same as in the male, using a glass syringe with a capacity of not over one dram. Night and morning the vagina and vulva are irrigated with warm bichloride solution, 1 : 5000, increasing to 1 : 2000, or potassium permanganate, 1 : 4000, up to 1 : 1000. Then 20 per cent. argyrol is applied to the whole surface and a tampon wet with the same solution is inserted, to remain until the next irrigation. After a few days, 1 per cent. protargol is substituted for the argyrol. After ten to fourteen days, when the inflammation has become localized, 1 per cent. lysol irrigations are employed, and every third day localized lesions are treated through a speculum, with silver nitrate, gr. xx–xxx to the ounce, followed by the insertion of a wood-wool tampon soaked in ichthyol glycerine or boroglyceride. The vulva may be dusted with a powder (see Vulvitis), and the labia kept apart with sterile absorbent cotton.

The urethritis may be treated as follows (Noble and Anspach): After the acute symptoms have subsided and the discharge has become purulent, inject once daily, by means of a medicine-dropper inserted one-quarter of an inch into the meatus with the lips of the latter gently closed against it and with the patient in the dorsal position and the bladder empty, 15 drops of 5 per cent. argyrol containing gr. ¼ of powdered burnt alum to the ounce (the femal urethra holds about 15 minims). Gradually increase the strength of the injection to 20 per cent. argyrol containing gr. iv of alum to the ounce. When the discharge has become small and mucopurulent, employ zinc sulphate and powdered burnt alum, aa gr. xv, and fl. ext. hydrastis, ʒi in water ʒiv; and later a more astringent solution, viz., tannic acid and zinc sulphate, aa gr. xx, in aq. destil. ʒiv. Together with the local treatments give internally ol. santali and bals. copaibæ, aa ♏v in capsule, three or four times daily; or ♏xv of either alone, t.i.d.

When employing strong injections, Bandler advises that the bladder be first filled with water so as to dilute any of the solution that may enter.

In obstinate cases, boroglycerine may be injected into the urethra every other day for six to twelve days, and then silver applied; or ichthyol and glycerine, 1 : 10 or 1 : 5, may be applied on a cotton-wound corrugated metal applicator, employing pressure in all directions to efface the folds of the urethra. (Jullien).

Stricture or marked infiltration is treated by gradual repeated dilatations with the Hegar dilators, followed by the application of 5 to 20 per cent. silver nitrate solution, made by means of an applicator or the tip of a Braun intra-uterine syringe covered with cotton, which is introduced and the injection made, after which the syringe is withdrawn, leaving the cotton in place (see Stricture of the Urethra). The following urethral pencils are used by Sheffield:

℞ Protargol ..... gr. iii–xv
Iodoformi ..... gr. xv
Balsami Peruviani ..... gtt. vi
Extracti belladonnæ ..... gr. i
Olei theobromatis, q.s.,
Ft. crayons (2 in. long and 1/16 in. thick), No. 15
Sig.—Insert one into the urethra twice daily. (Sheffield.)

Inject infected suburethral (Skene's) glands with silver nitrate or protargol, 10 to 20 per cent., or ichthyol. Expose the orifices of the ducts with the bent end of a hairpin employed as a speculum (Kelly), and inject the solution through a large blunt-pointed hypodermic needle attached to the bulb of a medicine-dropper. In obstinate cases lay open the glands through the vagina under local anæsthesia (see novocaine, and cocaine in Part 11), first inserting a probe (about one-half inch) and cutting down upon it. Then cauterize the cavity with 10 per cent. silver nitrate solution, or pure carbolic acid, or the actual cautery.

Treat Bartholin's glands likewise. Excise the glands in chronic cases. Whether incising or excising the glands, make the incision in the labium at the junction of skin and mucous membrane.

In stubborn cases of gonorrhœal vaginitis, Kelly advises the trial of dry, non-absorbent cotton tampons filled with iodoform powder, repeated every third day, the patient removing the tampons on the night of the second day and taking a douche of potassium permanganate, 1 : 1500.

In gonorrhœal endometritis, prescribe rest in bed in a semi-sitting posture, salines, an ice-bag or heat to the hypogastrium, and restricted diet; the discharge should be caught on vulvar pads of absorbent cotton or gauze and burned. After the more acute symptoms have subsided (three or four days) or even sooner the uterus may be dilated, irrigated with hot bichloride solution, 1 : 2000, through a two-way catheter, followed by normal saline

solution (℥i ad Oi), and then swabbed with pure carbolic acid or a concentrated solution of iodine in 95 per cent. carbolic acid. Thereafter the vagina is irrigated twice daily with permanganate solution, 1 : 4000. Ashton says that curettage of the cervix and uterine cavity is indicated if endometritis occurs, or if the discharge does not become normal in about ten days. It seems probable, however, that curettage is harmful. Indeed, some condemn all intra-uterine treatment, and use instead, perhaps, vaginal tampons saturated with glycerite of boroglycerine, or ichthyol-glycerine, ℥i ad ℥i.

In acute gonorrhœal adnexal disease, keep the patient in bed for two months, and for one week after the temperature has returned to normal. Employ an ice-bag to the hypogastrium, hot douches, ichthyol-glycerine tampons, 25 per cent., inserted at night and removed in the morning, salines and enemas, and light diet. If at any time the tubes become distended with pus and sink to the floor of the pelvis, Douglas's cul-de-sac may be opened widely, the pus tubes incised and evacuated, and a gauze drain or a T-shaped drainage tube surrounded with gauze, inserted.

In chronic recurrent cases of salpingo oöphoritis, operate and remove the offending structures, after first, according to Ashton, dilating, curetting, irrigating and cauterizing the uterine cavity. In young women, however, operate only as a last resort, after rest in bed, general tonic treatment, hot sitz-baths, hot vaginal douches, hot fomentations over the hypogastrium, and ichthyol-glycerine tampons have been given a trial (but see also Pelvic Inflammatory Disease).

Treat gonorrhœal peritonitis expectantly, *i.e.*, with rest in bed, ice to the hypogastrium, liquid diet, etc. (see Pelvic Inflammatory Disease).

For gonorrhœa in pregnancy employ no treatment, except, perhaps, douches. Keep the patient in bed for four or five weeks following labor, or until complete involution has taken place.

For rectal gonorrhœa, employ daily irrigations of potassium permanganate, 1 : 5000; and apply silver nitrate to ulcerations, first dilating the sphincter ani. Employ the Paquelin cautery for old stubborn fissures and ulcerations. Rectal gonorrhœa is very resistant to treatment, about four to six months being required for a cure.

For buccal gonorrhœa prescribe frequent astringent mouth washes, such as zinc sulphate, gr. ii–iv to the ounce. It lasts usually a few weeks.

For the treatment of other complications, consult the appropriate part of this work.

In resistant cases of gonorrhœa, vaccines and serums may be tried. The results, however, are uncertain, but sometimes excellent. One may begin with a dose of 5 million dead gonococci, injected into the muscle; the next day 10 million; the next, 25 million; then the injection may be given every other day, and the dose increased by 20 million or more each time (unless the symptoms are controlled or the reaction is marked), until a dose of 100 million is reached. If the serum is used, it should be given in doses of "two c.c. every day or every second or third day," injected deeply, "but not necessarily into a muscle." (Keyes).

Gonorrhœa is not uncommon in infants and young girls, to whom it is usually transmitted by napkins, towels, the hands, bath, lavatory, etc. In those under six the infection rarely extends to the uterus. The treatment in children is as follows: Instruct the mother to irrigate the vagina once, twice, or thrice daily with potassium permanganate, 1 : 2000, bichloride, 1 : 10,000 to 1 : 5000, or lysol, 0.5 to 1.0 per cent., using a soft rubber catheter, with the child on its back and thighs flexed. In chronic cases employ silver nitrate, 1 : 500, alternately with the permanganate. By bringing together the two halves of the vulva about the catheter, the vagina may be distended with fluid under pressure and its folds opened out. At first, on alternate days, the physician may apply, through a No. 10 Kelly speculum or a small Ferguson speculum, with the child in the knee-chest posture, a 3 to 30 per cent. silver nitrate solution, after first anæsthetizing the hymen by applying to it, for five to ten minutes, a pledget of cotton saturated with alypin, 2 per cent. Three times weekly, after the patient has urinated, and the urethra has been milked through the vagina and the bladder filled with water, the urethra may be injected by means of the Frank syringe with a 5 per cent. silver nitrate solution. For chafing, apply zinc oxide ointment, or 2 per cent. protargol ointment (chiefly after Kelly). If vaccine therapy is decided upon, one may give, according to Holt, 50 to 75 millon dead gonococci every four or five days until 5 or 6 doses have been administered. Four to six months are required for a cure.

Gynatresia.—Gr. γυνή woman + α priv. + τρῆσις perforation. See Atresia.

Hæmatocele, Pelvic.—Gr. αἷμα blood + κήλη tumor; L. *pelvis*, basin. See Extra-Uterine Pregnancy.

Hæmatocolpos.—Gr. αἷμα blood + κόλπος vagina. See Atresia of the Vagina.

Hæmatoma Vulvæ.—Gr. αἷμα blood + -ωμα tumor; L. *vulva*. Etiology.—External trauma; rupture of varicose veins during pregnancy or labor, or during heavy lifting or straining at stool, etc.

Treatment.—To arrest bleeding in the early stages, apply pressure and the ice-bag. Later, if the tumor is small, employ cleanliness and a light compress; if large or infected, lay open freely, turn out the clot, irrigate with hot normal saline solution (℥i ad Oi), or boric acid solution, ℥i–ii ad Oi, and pack with gauze. It is well to wait for from four to eight days, that is, until all danger of hemorrhage has passed, before making the incision. If the clot has become encapsulated, dissect out the cyst-wall and close with deep sutures.

Says Ashton: "A hæmatoma of the vulva should never be trusted to nature."

Hæmatometra.—Gr. αἷμα blood + μήτρα uterus. See Atresia of the Cervix, and Atresia of the Vagina.

Hæmatoporphyrinuria.—Gr. αἷμα blood + πορφύρεος purple + οὖρον urine. See Hæmoglobinuria.

Hæmatosalpinx.—Gr. αἷμα blood + σάλπιγξ tube. See Atresia of the Cervix; and Atresia of the Vagina.

Hæmaturia.—Gr. αἷμα blood + οὖρον urine. Hæmaturia, or the occurrence of red blood-cells in the urine, is distinguished from hæmoglobinuria (*q.v.*) by the presence of red blood-cells in the urinary sediment. Employ the cystoscope and ureteral catheterization for diagnostic purposes in regard to the source of the bleeding. The presence of numerous casts points to the kidney.

Etiology.—Hæmophilia; purpura; scurvy; leukæmia; pernicious anæmia; splenic anæmia; the hemorrhagic form of infectious diseases, *e.g.*, malaria, yellow fever, cholera, typhoid fever, typhus fever, smallpox, septico-pyæmia, scarlet fever, relapsing fever, cerebrospinal fever, influenza, pneumonia; kidney irritants, *e.g.*, turpentine, cantharides, phosphorus, aniline dyes, carbolic acid; varicose veins of the bladder, or vesical hemorrhoids, occurring in pregnancy etc.; passive congestion due to heart, lung, liver, or kidney disease; sudden withdrawal of urine from a distended bladder; traumatism to the kidney, ureter, bladder, or urethra, due to external violence, instrumentation, foreign bodies, calculi, the passage of calculi or crystals (see Nephrolithiasis); irritation of a highly concentrated or hyperacid urine; uric acid infarctions; local infections, *e.g.*, urethritis, cystitis, ureteritis, pyelitis, gonorrhœa, tuberculosis, distomiasis, filariasis, acute nephritis; chronic nephritis with local arteriosclerotic infarcts; renal tumors; vesical tumors; amyloid kidney; polycystic kidney; infarction of the kidney; floating kidney; aneurysm of the renal artery; varicose veins of a renal papilla; prolonged exercise; angioneurosis (?).

There is a so-called idiopathic or essential renal hæmaturia (called also nephralgia, neuralgia of the kidney, hæmaturic nephralgia, idiopathic nephralgia, renal hæmophilia, renal epistaxis, and angioneurosis of the kidney) which is not associated with any local pathological condition, unless it be varicosity of the veins of a renal papilla. A constant or intermittent hæmaturia occurs, sometimes associated with severe pain; or pain may occur alone. Casper says that renal pain may be caused by "firm adhesions between the true capsule of the kidney and the surrounding fatty capsule," and that decapsulation will cure such cases. Pain may also be caused by spasm of the ureter, and is then cured by the passage of a catheter. The injection of adrenalin through a ureteral catheter has been curative. The following drugs are recommended for the bleeding, viz., rectified spirits of turpentine, ♏viii in capsule t.i.d.; cantharides in small doses; fl. ext. senecio aureus, 2 c.c. or ♏xxx t.i.d., and Merck's stypticin, gr. iv, t.i.d.

Keyes says, if other measures fail, perform pyelotomy and curette the bleeding papilla; and if this fails, perform nephrectomy.

Treatment of Severe Vesical Hæmaturia.—Insert a retention catheter, to quiet the bladder, and inject about three ounces of hot silver nitrate solution, 1 : 1000 to 1 : 500; or the same amount of Merck's sterilized solution of gelatine, 2 to 5 per cent., hot; or fl. ext. hydrastis, one ounce to the pint; or antipyrin, 4 per cent.; or a heaping teaspoonful of Squibb's surgical powder (contains alum) suspended in 500 c.c., or 1 pint, of hot water ("the best application I know," says Keyes). Adrenalin, 1 : 5000 to 1 : 1000 is not satisfactory, say Casper and Keyes. Rest in bed is essential. Opium, ergot, stypticin, and hydrastis may be useful. The vagina may be packed with gauze for six or eight hours. If these measures fail, resort to suprapubic cystotomy, and ligate or cauterize any bleeding points.

To evacuate clots, insert a large glass or metal catheter and irrigate with hot salt or alum solution, ℥i ad Oi.; or hot phenol solution, 1 per cent.; or a cool solution of sodium bicarbonate.

Hæmoglobinuria.—See Part 1.

Hæmophilia, Renal.—Gr. *αἷμα* blood + *φιλεῖν* to love; L. *ren*, kidney. See under Hæmaturia.

Headache.—See Part 1.

Hemorrhage, Urinary.—Gr. *αἷμα* blood + *ῥηγνύναι* to burst forth; *οὖρον* urine. See Hæmaturia.

Uterine.—See Menorrhagia and Metrorrhagia.

Hemorrhoids.—See Part 1.

Hemorrhoids, Vesical.—L. *vesīca*, bladder. See Hæmaturia.

Hepatoptosis.—Gr. *ἧπαρ* liver + *πτῶσις* falling. See Splanchnoptosis, in Part 1.

Herpes Progenitalis.—Gr. *ἕρπειν* to creep; L. *pro*, Gr. *πρό* before; L. *genita'lis*, genital. A non-contagious, mucocutaneous affection of the vulva and vagina, characterized by the appearance of one or more small vesicles upon an inflamed base, the vesicles later becoming ulcers, and usually healing in about one or two weeks. Itchiness accompanies the eruption. It is often recurrent.

Etiology.—Local irritation, due to menstruation, pregnancy, excessive coitus, uncleanliness, inflammation or congestion of the genito-urinary organs, venereal disease, irritating discharges; lithæmia; digestive disturbances; excesses in eating or drinking; debility; nervous depression; atmospheric changes; cold.

Treatment.—Attend to the cause. Enjoin adequate rest and exercise, fresh air day and night, a simple diet, regular hours of eating and sleeping, rest before and after meals, regulation of the bowels, and general and local cleanliness. Prescribe a tonic, if required, *e.g.*, iron, arsenic, codliver oil.

℞ Elixir ferri, quininæ, et strychninæ phosphati ..... ℥iv
Sig.—One teaspoonful in water, t.i.d.p.c.

℞ Acidi nitrohydrochlorici diluti ..... ℥ii (ɱv per dose)
Aquæ ..... ℥iss
Strychninæ sulphatis .... gr. i (gr. ¼ per dose)
Misce et adde.

Tincturæ gentianæ compositæ,
Tinct. cardamomi comp., aa q.s. ad..℥vi
Sig.—Dessertspoonful after meals in water. (H. C. Wood.)

Douche the vagina and vulva twice daily with bichloride solution, 1 : 4000, followed by normal salt solution (℥i ad Oi), or with boric acid solution, ℥i–ii to the pint (see also Vaginitis). Protect the vulva against irritating vaginal discharges by means of cotton-wool tampons, and keep the vulval lips apart with lint. Puncture vesicles and touch lightly with the pointed silver stick or solution, gr. x–xl ad ℥i. The following astringent lotion may be applied on lint or cotton, two or three times daily:

℞ Calaminæ,
Zinci oxidi,
Acidi borici, aa..... ℥i
Alcoholis..... ℥ii
Aquæ, q.s. ad..... ℥iv—Shake well.

Or, particularly useful for the relief of burning and itching:

℞ Calaminæ,
Zinci oxidi, aa..... ℥i–ii
Acidi borici..... ℥i
Glycerini..... ɱxxx
Acidi carbolici..... ɱx–xxx
Liquoris calcis..... ℥i
Aquæ, q.s. ad..... ℥iv—Shake well.

Or, zinc sulphate solution, 0.5 to 2.0 per cent. Zinc oxide ointment and dusting powders (see Vulvitis), are useful.

In obstinate and recurring cases, apply daily, for ten minutes, the galvanic current of ½ to 2 milliampères, with the positive electrode over the lower lumbar region and the negative electrode over the affected part; or apply a mustard poultice over the lumbar spine every day or two. Arsenic is also advised. Daily hot sitz-baths are beneficial.

Hydatid Cyst of the Kidney.—Gr. *ὑδατίς* vesicle; *κύστις* bladder. See Tumors of the Kidney.

Hydatidiform Mole.—See Part 4, Obstetrics.

Hydrocele of the Labium Majus.—Gr. *ὕδωρ* water + *κήλη* tumor; L. *la'bium*, lip; *ma'jus*, greater. See Tumors of the Vulva.

Hydrometra.—Gr. *ὕδωρ* water + *μήτρα* uterus. See Atresia of the Cervix, Acquired.

Hydronephrosis.—Gr. *ὕδωρ* water + *νεφρός* kidney. Hydronephrosis, or distention of the renal pelvis with urine, is the result of gradual incomplete urinary obstruction, permanent or intermittent.

Fixed hydronephrosis is diagnosed by the presence of a gradually growing, non-inflammatory tumor, by ureteral catheterization, exploratory incision, etc. Intermittent hydronephrosis is characterized by the occurrence of attacks of severe pain (Dietl's crises), associated with the sudden appearance of a movable, enlarged kidney, which collapses coincidentally with the relief of the

pain and the passage of a large amount of urine.

Etiology.—A. Congenital.—Partial stenosis of the ureter at either extremity; oblique insertion or high insertion of the ureter into the renal pelvis; valve formation; compression of the ureter by a supernumerary or aberrant renal blood-vessel; double ureter; malpositions and kinking.

B. Acquired.—Urethral stricture; thickened bladder walls; vesical tumors; uterine tumors; ovarian tumors; cancer in the broad ligaments; cancer of the cæcum; retroperitoneal pelvic sarcoma; ureteral tumors; ureteral gumma; periureteritis; periureteral adhesions; ureteritis (colon, gonococcus, or tubercle infection); calculus, blood-clot, or echinococcus cyst in the ureteral canal; traumatism due to the passage of a stone, to external violence, or to a temporary ligature or clamp; gravid uterus; retroflexed uterus; tumor or stone in the renal pelvis; aneurysm of the iliac artery; scoliosis causing renal displacement; movable kidney, producing a kinking of the ureter, and resulting intermittent hydronephrosis; compression of the ureter by perirenal or periureteral blood-clots due to trauma.

Treatment.—Remove the cause, if possible. Stretch ureteral strictures by means of bougies; remove obstructing stones, tumors, etc.; resect diseased portions of the ureter; perform pyeloplication upon a dilated renal pelvis; do a uretero-pyelostomy, if indicated; employ a pad and binder, or nephropexy, or decapsulation for movable kidney (see under Splanchnoptosis). In operating always explore the ureter by means of a catheter passed into the bladder. If very little kidney substance is left, the tumor large, the obstruction not relievable, and the other kidney functionally active (see Urinalysis,) perform nephrectomy.

As a palliative measure in bilateral cases with anuria, and in cases with severe pressure symptoms, aspirate the kidney just below the last intercostal space on the left side, and midway between the last rib and the crest of the ilium on the right side.

Hymen, Imperforate.—Gr. *ὑμήν* membrane; L. *imperfora'tus*, not open. See Atresia of the Vagina.

Hyperæmia of the Bladder.—Gr. *ὑπέρ* over + *αἷμα* blood. See Bladder Irritability.

Hyperæsthesia, Vesical.—Gr. *ὑπέρ* over + *αἴσθησις* sensibility; L. *vesi'ca*, bladder. See Bladder Irritability.

Hypernephroma.—Gr. *ὑπέρ* over + *νεφρός* kidney + *-ωμα* tumor. "A tumor derived from suprarenal tissue, either of the gland itself or misplaced in the kidney or elsewhere." — Dorland. See Tumors of the Kidney.

Hypertrophy of the Cervix.—See Cervical Hypertrophy.

Vulva.—See Elephantiasis, Part 5, Skin Diseases.

Idiopathic Renal Hæmaturia; Idiopathic Nephralgia.—Gr. *ἴδιος* own- + *πάθος* disease; L. *ren*, kidney; Gr. *νεφρός* kidney + *ἄλγος* pain. See under Hæmaturia.

Imperforate Hymen.—L. *imperfora'tus*, not open; Gr. *ὑμήν* membrane. See Atresia of the Vagina.

Incontinence of Urine.—L. *incontinen'tia; uri'na.* Etiology.—Vesical calculi and foreign bodies; cystitis; vesico-urethral fissure; vesical tuberculosis; vesical tumors; urinary fistula; posterior urethritis; urethral stricture; urethral eversion; urethral caruncle; urethral dilatation; sphincteric traumatism due to labor or operation; sphincteric paralysis due to spinal cord disease, *e.g.*, injury of the cord, tumors, myelitis, tabes, general paralysis, disseminated sclerosis, spondylitis, etc.; uterine displacements; pressure of tumors, particularly fibroids of the uterus; distended colon; pregnancy; pelvic inflammatory disease; abdomino-pelvic operations; rectal disease; hemorrhoids; hernia; irritating purulent or acid urine; lithæmia; crystals in the urine (see Nephrolithiasis); too high or too low specific gravity; irritating ingesta (ginger, radishes, spices, turpentine; cantharides, salicylates, quinine, etc.); excessive coitus or masturbation; overwork and anæmia; vaginismus, neurasthenia, hysteria; epilepsy; malaria; nervous irritability; cold. (For incontinence in children see Enuresis, in Part 3.

In the passive incontinence due to labor traumatism and subinvolution, urethrocele and cystocele are often present. The incontinence is intermittent, caused by sneezing, coughing, fright, sudden change of position, etc.

Do not mistake false or paradoxical incontinence, due to overflow of a distended bladder, for true incontinence.

Treatment.—Attend to the cause. Consult Bladder Irritability, and Dilatation of the Urethra.

For paralytic incontinence prescribe the following:

℞ Extracti ergotæ
Extracti Belladonnæ, aa gr. ¼
Fiat pilula una. Mitte talis 12.
Sig.—One or two pills once or twice a day.

Should cystitis develop, prescribe urotropine, gr. v, twice or thrice daily, and

irrigate the bladder with boric acid solution, ʒi–ii to the pint. The bladder should be irrigated once a day if the catheter reveals the presence of residual urine. Encourage the patient to try to void urine every two or three hours.

Infantile Uterus.—L. *infantilis*. See under Dysmenorrhœa, and Sterility.

Inflammation of Bartholin's Glands.—L. *inflammare* to set on fire. See Vulvitis.

Bladder.—See Cystitis.

Cervix.—See Cervicitis.

Fallopian Tubes.—See Pelvic Inflammatory Disease.

Kidney.—See Pyelonephritis.

Ovaries.—See Pelvic Inflammatory Disease.

Pelvic Organs.—See Pelvic Inflammatory Disease.

Pelvic Peritoneum.—See Pelvic Inflammatory Disease.

Rectum.—See Proctitis, Part 1, General Medicine and Surgery.

Skene's Glands.—See Gonorrhœa; and Vulvitis.

Tubes.—See Pelvic Inflammatory Disease.

Urethra.—See Urethritis.

Uterus.—See Metritis.

Vagina.—See Vaginitis.

Vulva.—See Vulvitis.

Womb.—See Metritis.

Inflammatory Disease, Pelvic.—See Pelvic Inflammatory Disease.

Injuries of the Bladder.—See Bladder Injuries.

Kidney.—See Kidney Injuries.

Intermenstrual Pain, Periodic.—L. *inter*, between + *mensis*, month; *pœna*, pain; Gr. περί around + ὁδός way. The cause is unknown. Possible causes are: thickening of the ovarian capsule, resisting the bursting of mature graafian follicles; a hydrosalpinx or pyosalpinx discharging periodically into the uterine cavity (salpingitis profluens); uterine obstruction from stenosis or flexure.

Treatment.—This is usually unsatisfactory. Make a thorough examination and treat any abnormality present. Attend to the general health. Enjoin rest in bed during the pain. (See Dysmenorrhœa.)

Intertrigo.—See Part 5, Skin Diseases.

Inversion of the Uterus.—L. *in*, into + *vertere*, to turn; *uterus*, womb. Inversion of the uterus is extremely rare. It may be acute or chronic, partial or complete. Acute inversion is usually accompanied by acute pain, shock, and sometimes hemorrhage; strangulation and gangrene sometimes occur, and there is great danger of infection. Chronic inversion is usually accompanied by a chronic discharge and hemorrhages, rarely few or no symptoms, and there is danger of acute infection. The condition is revealed by vaginal examination. Polyp is excluded by the fact that in inversion a sound passed between the cervix and the protrusion may be inserted only a little way before it is obstructed. In partial inversion, as distinguished from complete inversion, the inverted uterine wall does not protrude through the external os.

Etiology.—The essential or primary predisposing cause is local uterine inertia or relaxation or paralysis. Contributory causes are as follows, viz., too frequent pregnancies; multiple pregnancy; hydramnios; systemic debilitating disease; prolonged labor; rapid labor; delivery in the erect posture; a short cord or a cord wound repeatedly around the child's neck; early traction upon the cord; adherent placenta; fundal attachment of the placenta; manual removal of the placenta; injudicious pressure over the fundus of the uterus; uterine tumors—fibromyoma, sarcoma, carcinoma; violent intra-abdominal pressure, as in straining, vomiting, coughing, etc., during or after the third stage of labor; distention of the uterus with retained fluids or tumors; weight of the intestines; unknown conditions.

Treatment.—A. Acute Inversion.—Anæsthetize the patient, remove the placenta rapidly if still attached, then replace the uterus by hand during a period of relaxation, pressing with the fingers upward and toward the abdominal wall, *i.e.*, in the direction of the axis of the superior strait. With the hand still in the uterine cavity, douche the latter with hot normal salt solution (ʒi ad Oi), in order to stimulate contraction. Remove the hand only while the uterus is contracting. Then administer ergot. Some advise replacing the uterus before detaching the placenta, to avoid serious hemorrhage.

If the case is seen after the lapse of a number of days, divide the cervix in the median line posteriorly, reinvert the womb, and close the incision with sutures. (Hirst.)

B. Chronic Inversion.—First reduce congestion by means of rest in bed with the hips elevated, laxatives, simple diet, and hot normal saline irrigations, morning, noon, and night, continued for two weeks. Then endeavor to replace the uterus gradually (the patient remaining in bed under the above regimen) by tamponading the vagina thoroughly every second day after irrigation

with hot normal saline solution; or by Braun's colpeurynter, smeared with sterile zinc oxide ointment, and held in place by a tight bandage (remove for several hours each day); or by White's spiral spring repositor, held in place with two elastic bands in front and two behind attached to a broad abdominal binder, the rim of the cup being covered with lint saturated with carbolized oil, gtts. viii ad ℥i ("remove and reapply every day"—Penrose). Continue one or all of these methods, with perhaps attempts at reduction by taxis under anæsthesia, for at least five or six weeks, if necessary. Prescribe iron for anæmia. For hemorrhage employ hot water or vaginal gauze tampons.

If these measures fail, split the anterior and posterior lips of the cervix, restore the uterus, and suture the split lips; or dilate the cervix through the incised fundus, close the incision with catgut sutures, and replace the uterus (Browne); or, with two fingers of the right hand in the rectum and two fingers of the left hand in the bladder (through a dilated urethra or vesico-vaginal fistula) make counter pressure upon the cervix while the balls of the thumbs press firmly against the inverted fundus (Tate); or employ counter-pressure upon the cervix through anterior and posterior vaginal incisions into the pelvic cavity; or amputate the inverted fundus; or perform vaginal hysterectomy. The latter is demanded in the presence of infection or gangrene.

Irritability of the Bladder.—See Bladder Irritability.

Ischuria.—See Anuria, in Part 1, General Medicine and Surgery.

Itching.—See Pruritus.

Kidney Abscess.—See Pyelonephritis, in Part 1, General Medicine and Surgery.

Angioneurosis of the.—See Hæmaturia.

Calculus.—See Nephrolithiasis.

Cancer.—See Tumors of the Kidney.

Cysts.—See Tumors of the Kidney.

Degeneration, Cystic.—See Tumors of the Kidney.

Fistula.—See Fistula, Renal.

Floating.—See Splanchnoptosis, in Part 1, General Medicine and Surgery.

Hemorrhage.—See Hæmaturia.

Hypernephroma.—See Tumors of the Kidney.

Inflammation.—See Bright's Disease and Pyelonephritis, in Part I, General Medicine and Surgery.

Kidney Injuries.—**Symptomatology.**—Pain, tenderness and swelling, revealed by bimanual palpation, hæmaturia, and oliguria followed usually by polyuria are the primary local manifestations. Ureteral colic may occur as a result of the passage of blood-clots.

Treatment.—Where the hæmaturia and swelling are slight, and there are no symptoms of shock, employ rest in bed for at least three weeks, strap the parts, apply an ice-bag, and give morphine if necessary to relieve pain. Administer low diet to keep the blood-pressure low. The occurrence of secondary suppuration, as evidenced by elevation of temperature and rapid pulse, calls for lumbar incision.

Perform a lumbar exploratory operation immediately if shock or hæmaturia is severe, if the swelling (hæmatoma or urohæmatoma) is increasing, or if anuria occurs. Examine the pelvis and ureters; remove ureteral obstructions; close pelvic rents; control kidney hemorrhage by purse-string suture or packing; and if this does not arrest the bleeding, remove the kidney. Irrigate and drain following operation.

Evidences of intraperitoneal bleeding call for laparotomy. Gunshot and stab wounds usually demand an exploratory operation.

If blood-clots in the bladder cause pain or retention, irrigate the bladder through a catheter with warm boric acid solution, ʒi–ii ad Oi; or use Bigelow's apparatus to break up and evacuate the clots. If this fails, do a cystotomy.

Kidney, Movable.—See Splanchnoptosis, in Part 1, General Medicine and Surgery.

Neuralgia of the.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See under Hæmaturia.

Polycystic.—Gr. *πολύς* many + *κύστις* cyst. See Tumors of the Kidney.

Sarcoma of the.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Kidney.

Stone.—See Nephrolithiasis in Part 1, General Medicine and Surgery.

Traumatism.—Gr. *τραῦμα* wound. See Kidney Injuries.

Tuberculosis of the.—See Tuberculosis of the Kidney.

Tumors.—See Tumors of the Kidney.

Kraurosis Vulvæ.—Gr. *κραῦρος* dry; L. *vvlv'a*, vulva. See Part 5, Skin Diseases.

Laceration of the Cervix.—See Cervical Lacerations.

Lateral Location of the Uterus.—L. *la'tus*, side; *locat'io*, placement. **Causes.**—Tumor; inflammatory mass; cicatricial contraction. (Dudley.)

Treatment.—Attend to the cause. In post-inflammatory cases, bimanual massage and systematic tamponade of the vagina may

restore the uterus to its normal position and mobility (see Pelvic Inflammatory Disease).

Leucorrhœa.—Gr. λευκός white + ῥοία flow. The cervical discharge is stringy, glairy, viscid, thick, tenacious, and mucoid, like the white of an egg, or it may be mucopurulent; whereas a vaginal discharge is "curdy, or milky, or creamy"; and an endometrial discharge is more serous.

Etiology.—Urethritis; vulvitis; vaginitis; endocervicitis; endometritis; salpingitis profluens (a hydro- or pyo-salpinx discharging periodically into the uterine cavity); carcinoma; sloughing myoma; cervical laceration; menstruation; polypi; chronic pelvic congestion (*q.v.*, for causes).

Treatment.—Attend to the cause. Cool sitz-baths and astringent vaginal irrigations (see Vaginitis) are useful in cases of hypersecretion.

Lipoma Vesicæ.—Gr. λίπος fat + -ωμα tumor; L. *vesĭca*, bladder. See Tumors of the Bladder.

Lipoma Vulvæ.—See Tumors of the Vulva.

Lupus Vulvæ.—L. *lŭpus*, wolf. See Tuberculosis of the Genital Organs.

Lymphangitis, Pelvic.—L. *lymph'pha*, lymph + Gr. ἀγγεῖον vessel + -ιτις inflammation; L. *pelv'is*, basin. See Pelvic Inflammatory Disease.

Masturbation.—L. *man'us*, hand + *stupra're*, to rape. See Part 1, General Medicine and Surgery.

Membranous Dysmenorrhœa.—See Dysmenorrhœa.

Menopause; Climactery.—Gr. μήν month + παῦσις cessation; κλιμακτήρ round of the ladder. The menopause occurs usually between the ages of forty and fifty-five years. Menstruation may cease abruptly, or it may become irregular preceding its cessation. The genital organs atrophy. The following symptoms commonly occur, viz., congestions, flushes, sweatings, palpitations, dizziness, flatulence and other gastric and intestinal disorders, neuralgias, insomnia, mental unrest and anxiety, irritability of temperament.

Treatment.—Enjoin the observance of correct hygiene, *i.e.*, adequate rest and exercise, fresh air day and night, a cold bath every morning on arising, in a warm room standing in warm water, a hot bath twice a week at bedtime (for nervous symptoms), regular hours of eating and sleeping, rest before and after eating, plain food, three or four pints of water daily, an occasional morning saline. Ovarian extract, or ovarin (Merck) is highly recommended in both the artificial and natural menopause. Dried corpus luteum is also recommended. Thyroid extract is recommended for irregular hemorrhages. For constipation, digestive disturbances, vertigo, etc., Gant recommends physostigmine and nux vomica. Sodium bromide, valerian, and asafœtida may be of occasional service for the relief of nervous symptoms. For annoying flushes, Ashton prescribes cold baths, and sodium bromide, gr. xx, well diluted, three or four times daily or picrotoxin, gr. $\frac{1}{100}$ to $\frac{1}{80}$, t.i.d.; and, if headache accompanies the flushes, fl. ext. gelsemii, ♏ii–iii, every three hours, and a dram of sodium phosphate every morning before breakfast. For pelvic congestion one may employ an occasional saline purge, hot vaginal douches, glycerine tampons, and scarification of the cervix. One must remember that increase in the flow, or return of the flow after its cessation, or an increase of leucorrhœa may possibly mean cancer. Lacerations of the cervix and perineum may be repaired in order to prevent cancer and senile prolapse (Ashton). One should bear in mind the great value of the obesity diet-cure in appropriate cases.

Hemorrhage at the menopause responds readily to radio-therapy.

Menorrhagia and Metrorrhagia; Uterine Hemorrhage.—Gr. μήν month; μήτρα uterus; ῥηγνύμα to burst forth. Etiology.—A. Local Causes.—Chronic pelvic congestion (*q.v.*, for causes); fibromyoma, especially when submucous; polypi (mucous, fibroid, or placental, the latter following protrusion of an ovum); cancer or sarcoma or adenoma of the fundus or cervix; chorio-epithelioma; inversion of the uterus; uterine displacements; subinvolution and metritis; endometritis, acute or chronic (both rare causes); endocervicitis; hypertrophy or chronic hyperplasia of the endometrium (polypoid or fungoid endometritis); endometrial tuberculosis; tubal tuberculosis; ovarian disease (functional hyperactivity, inflammation, cystic degeneration, tumors); tubal inflammation; tubal tumors; broad ligament affections (varicocele, hæmatoma, tumors, cysts); tumors of the pelvis, rectum, or bladder; pelvic inflammatory disease; appendicitis; pelvic hæmatocele; laceration of the cervix or perineum; sclerosis of the uterine blood vessels and fibrosis uteri; foreign substances in the uterine cavity; pregnancy (abortion, extra-uterine pregnancy, placenta prævia, separation of the placenta, hydatidiform mole).

B. Constitutional Causes.—Anæmia; purpura; hæmophilia; scurvy; lead; phosphorus; infectious diseases (malaria, syphi-

lis, influenza, pneumonia, typhoid fever, rheumatic fever, scarlet fever, smallpox, diphtheria, cholera, sepsis, etc.); the rheumatic diathesis; alcohol and rich food; obesity; sedentary life; constipation; general debility; phthisis; cardiac, pulmonary, hepatic, renal, or splenic disease, producing passive congestion; emotional states and hysteria; "reflexes incident to puberty, the menopause, or lactation" (Ashton); "change of residence from a low to a high altitude, or from a temperate to a tropical country." (Ashton.)

Treatment.—Treat each case according to its cause. A microscopic examination of the uterine scrapings furnishes important information, either positive or negative. Curettage followed by the application of pure carbolic acid is curative in only about 10 per cent. of the cases. Polypoid endometritis is only temporarily benefited by curettage. The application to the endometrium of a 30 to 40 per cent. solution of formaldehyde on cotton for fifty seconds is well recommended (Gerstenberg). Several curettings or cauterizations may be necessary. Atmocausis, or the application of steam at a temperature of 100° C. for thirty to forty seconds (five to eight minutes if it is desired to produce oblitio cavi, as in fibrosis uteri and arteriosclerosis) is described by Bandler. The cervix should be dilated; and the patient should remain in bed for ten to fourteen days after the treatment. Intrauterine electricity is generally condemned as highly dangerous. The X-rays and radium produce more or less atrophy of the uterus and ovaries, which explains their usefulness. To produce amenorrhœa with the X-ray requires large doses for nine to eighteen weeks; whereas one treatment with radium may produce it. For the menorrhagia of young girls, Kelly and Burnham employ with great success, 12 mg. of radium (see Radium, Part 1) in the uterine cavity for from five to twenty-four hours.

The following uterine styptics are useful (see Drugs, Part 11): Ergot, administered before and during the menses; useful in subinvolution, metritis, fibromyoma, congestion.

Pituitrin or pituglandol, 1 c.c., or less, hypodermically, every one to three days for from five to twenty doses.

Hydrastis, administered before and during the menses; useful in subinvolution, metritis, endometritis, fibromyoma, active and passive congestion, pregnancy ("does not interfere with the normal course of gestation"—Ashton). It may be combined with ergot.

℞ Fluidextracti ergotæ,
Fluidextracti hydrastis, aa..... ℥i

M. Sig.—One dram, in water, three or four times a day.

℞ Hydrastininæ hydrochloridi ..... gr. x
Ergotini..... gr. xl
Strychninæ sulphatis..... gr. ss

M. et ft. pil. No. 20.

Sig.—One pill t.i.d. (Ashton.)

Stypticin (cotarninæ hydrochloridi), capsulas No. 50, aa gr. i. Give gr. i, t.i.d., for about a week before the expected flow; then gr. iiss–v every two or three hours until the flow is lessened (do not continue if three doses of 2½ to 5 grs. are ineffectual); then decrease the dose to gr. i–iiss every three or four hours (Boldt). For a quick result, give 3 to 6 grs. in a 10 per cent. solution (6 grs. to the dram) subcutaneously in the buttocks (Boldt); 1 to 2 minims of a 10 per cent. aqueous solution (H. A. Kelly). Kelly gives, of styptol, gr. i, t.i.d., until the flow begins, then gr. iss every three hours throughout the period. Useful in "climacteric hemorrhage; subinvolution not depending on the retention of products of conception; disease of the appendages or parametrium, the uterus itself being healthy; congestive hæmorrhage in young girls; fibrosis (not submucous polypi)". (H. A. Kelly.)

℞ Ergotinæ..... gr. i–iii
Cotarninæ hydrochloridi..... gr. ss–iii
Hydrastininæ hydrochloridi..... gr. ¾
(vel Pulveris hydrastis, gr. v)

M. et ft. pilula una. Mitte talis 60.

Sig.—One pill three or four times daily.

Adrenalini chloridi, 1 : 1000, 15 drops in water t.i.d.

Calcii chloridi, ℥ii ℈ii, Aquæ, ℥iv. M. Sig.—One dram (gr. v) well diluted, t.i.d.p.c. during the intermenstrual period, and every two hours during the flow. "Avoid milk during its use." (Bandler.) "Especially indicated for bleeding due to myomata." (Bandler.)

℞ Acidi gallici ..... ℥ ii (gr. x per dose)
Tincturæ cinnamomi.... ℥ vi
Aquæ destillatæ, q.s. ad. ℥ vi

M. Sig.—One tablespoonful every three or four hours. (Emmet and Taylor.)

Other remedies in appropriate cases are digitalis begun one week before the flow (it may be combined with ergot—Fordyce Barker); dilute sulphuric acid and other mineral acids; alum; hamamelis; cotton root; virburnum prunifolium; stagnin; nuclein; thyroid extract; mammary extract; ovarian extract; bromide; opium; cannabis indica; iron. Digitalis is of service in congestive states and in pregnancy. The salines are of value in congestive cases.

Repeated subcutaneous injections of whole blood are effectual in many cases, according to Curtis. If hemorrhage is due to lactation, the child should be weaned. In cases of presumable fibrosis uteri and arteriosclerosis, if curettage and other measures, including x-ray therapy, thyroid therapy, and atmocausis (to produce oblitio cavi), fail, perform vaginal hysterectomy (Bandler). In cases with a hemorrhagic diathesis, one may prescribe "an abundance of gelatine" in the food.

In all cases enjoin the observance of correct hygiene, viz., adequate rest and exercise, mental and sexual rest, fresh air day and night, regular hours of eating and sleeping, rest before and after meals, a daily morning warm bath in a warm room, followed by a cold spinal douche, bland food, chiefly vegetable, water freely, no alcohol, coffee, tea, spices, or red meats, free bowel activity. A tonic may be prescribed, if indicated.

℞ Acidi arsenosi..... gr. 1/50
Extracti calumbæ..... gr. i
Quininæ sulphatis..... gr. ss
M. et ft. pilula una. Mitte talis 100.
Sig.—One pill t.i.d.p.c. (H. A. Kelly.)

Strychnine may be given, but, as a rule, no iron.

At the commencement of the flow, or before, the patient should take a hot bath if convenient, and go to bed in a quiet room. The foot of the bed should be elevated. A hot water bag may be placed to the spine. The bowels should be free. Hot douches, from one to three gallons at a temperature of 110° to 120° F., lasting fifteen to twenty minutes, may be taken two or three times a day, in the intermenstrual as well as during the menstrual period. If the flow persists, the vagina may be tamponed with sterile wool, or gauze or cotton covered with sterile vaseline. The tampon is left in for from eighteen to twenty-four hours, then removed, a douche given, and another tampon inserted. "Intra-uterine applications of adrenalin have been recommended highly" (Dudley). In cases where much blood has been lost, administer normal saline (0.9 per cent.) infusions and inject strychnine hypodermically.

Dudley says: "The treatment of uterine hemorrhage in girls and young women is often that of a systemic cause; the treatment in married women of the child-bearing age is usually that of endometritis (metritis), benign tumors, or displacements; the treatment of the menorrhagia of spinsters is commonly that of benign tumors; and of women between the ages of forty and fifty years, often that of malignant growths or myomata; the treatment during senility is often that of malignant disease."

Menstruation, Absent.—L. *men'sis*, month. See Amenorrhœa.

Excessive.—L. *men'sis*, month. See Menorrhagia.

Painful.—See Dysmenorrhœa.

Menstruation, Precocious. — Etiology. — Heredity; parasites (genital or rectal: ascarides, etc.); adherent prepuce; uncleanliness, especially cheesy accumulations about the clitoris; neoplasms of the generative organs; masturbation; "reading lewd literature"; "immoral associations"; "undue nervous and mental excitement."

Treatment.—Attend to the cause. Prescribe adequate rest, recreation, and exercise, fresh air day and night, regular hours, regulation of the bowels, a bland diet, cold baths, etc. See Masturbation, in Part 1, General Medicine and Surgery.

Menstruation, Profuse.—See Menorrhagia.

Scanty.—See Amenorrhœa.

Supplementary. — See Menstruation, Vicarious and Supplementary.

Suppression of.—See Amenorrhœa.

Menstruation, Vicarious and Supplementary.—L. *vica'rius*, taking the place of. Periodic bleeding, at the menstrual period, from some part of the body other than the uterus is rare. It is "most often met with in cases of undeveloped genital organs, atresia, and premature menopause" (Ashton). Neurasthenia is often present.

Treatment.—If amenorrhœa exists, search for its cause. Build up the general health. A prolonged, copious hot douche, hot applications to the hypogastrium, and hot sitz-baths may be tried at the supposed menstrual period. Emmenagogue drugs may be prescribed. The cervix may be scarified, especially if there is distressing headache, flushing and dizziness not relieved by the vicarious hemorrhage.

In cases of undeveloped generative organs with severe molimina, the ovaries may have to be removed.

Metritis.—Gr. μήτρα womb + -ιτις inflammation. Metritis is inflammation of the uterus, embracing the endometrium, myometrium, and parametrium (Gr. παρά beside; the cellular tissue about the uterus). The symptoms are those of endometritis together with enlargement and tenderness of the uterus, which is apt to be soft and boggy.

Acute metritis is manifested by local pain, tenderness, and muscular rigidity, perhaps

painful urination and defecation, a variable temperature, perhaps chills, perhaps nausea and vomiting.

Chronic metritis (including subinvolution following labor, miscarriage, or menstruation) is manifested by lumbo-sacral pain, feeling of weight in the pelvis, perhaps painful urination and defecation, leucorrhœa, menorrhagia or metrorrhagia, vertical and occipital headache, gastro-intestinal and neurasthenic symptoms, and general debility. The cervix is patulous and easily dilatable.

Etiology.—Vulvo-vaginitis; endometritis; puerperal infection; infection following operations and examinations; cervical laceration; laceration of the pelvic floor; retention, following childbirth, of portions of the placenta, the membranes, the decidua, or blood-clots; exposure to cold; non-lactation; too early out of bed following labor; repeated abortions; tumors in or near the uterus; uterine displacements; pessaries, chronic pelvic congestion (*q.v.*, for causes); traumatism.

Causal bacteria include the gonococcus, staphylococci, streptococci, colon bacillus, pneumococcus, bacillus tuberculosis, diphtheria bacillus, etc.

Treatment.—I. Acute Metritis.—Put the patient to bed in a semi-sitting posture, place an ice-bag or hot water bag to the hypogastrium, and purge freely with calomel, gr. ii–iv followed by salines. Administer concentrated liquid and soft diet every three or four hours, and water in abundance. Dudley recommends, for abortive purposes, five or more leeches over each inguinal region and five to the perineum; a large blister may also be applied to the hypogastrium, or turpentine stupes, or alcohol fomentations, or mustard or flaxseed poultices. Hot or warm vaginal douches may serve to promote the reaction of inflammation. For severe pain, insert a suppository containing ext. opii aq., gr. i, and ext. belladonnæ, gr. $\frac{1}{6}$. Later, when the acute symptoms have subsided, glycerine tampons attached to a string, to facilitate removal, may be placed against the external os. These should be removed at the end of twenty-four hours, followed by a douche. Iodine, painted upon the cervix and vaginal vault, is recommended as a counter-irritant. Ergot or quinine (gr. iii, twice daily), or pituitary extract, may be administered for the purpose of contracting the uterus.

Should the patient's condition become worse, with the appearance of marked symptoms of toxæmia, it is often difficult to know what to do. If the condition is sapræmic, that is, due to retained decomposing material, such as blood-clots, fragments of placenta or membrane, or decidua (causing ptomaine blood poisoning), this should probably be removed with the finger, curettement forceps, and large dull wire curette, with care not to inflict traumatism, and the uterine cavity then copiously irrigated with hot water, or formaldehyde, 1 : 4000, or bichloride, 1 : 4000, followed by normal salt solution, and drainage established by means of gauze, which should be removed at the end of twenty-four hours. Uterine retention tubes may be used. Following the irrigation the uterus may be swabbed (using cotton wound on dressing forceps) with creolin, or with a saturated solution of iodine crystals in pure carbolic acid, or with a 25 per cent. solution of ichthyol in glycerine. Sharp curettage of the endometrium is generally condemned. After the uterus has once been emptied, it should be left severely alone.

Many gynæcologists regard with disfavor any intrauterine or vaginal treatment, and recommend an "attitude of watchful expectancy," performing abdominal or vaginal section when indicated (see Pelvic Inflammatory Disease), and draining abscesses or removing the uterus and its appendages.

If a blood culture reveals the presence of streptococci, antistreptococcic serum may be tried in large doses—20 c.c. t.i.d., hypodermically, according to Edgar; 80 c.c every six hours, 320 c.c. during the first twenty-four hours, according to J. S. Evans. Its action, however, is uncertain.

Yeast is recommended because it increases leucocytosis. One-fourth of an ordinary compressed yeast-cake may be given three times a day, dissolved in a glass of water. Nuclein, 10 to 60 minims of a 5 per cent. solution, hypodermically, is also recommended for the same reason; as is also Credé's ointment, 15 to 45 grs. rubbed into the skin for twenty minutes once to thrice daily, and covered with rubber tissue; or daily intravenous injections of argentum colloidale, gr. xv, in a 2 per cent. emulsion, and neo-salvarsan. Normal saline solution (0.9 per cent.), one litre every six hours, subcutaneously, or $\frac{1}{4}$ to 1 litre every three to six hours per rectum by the Murphy drop-method, is advised. A plentiful supply of fresh air is all important. If a cardiac stimulant is required, employ strychnine, or caffeine, or camphor. The body should be bathed frequently with warm water and perhaps alcohol and water, equal parts.

II. Chronic Metritis.—Enjoin a quiet life, partial rest in bed, the avoidance of sitting, no coitus, fresh air day and night, a nutritious diet, regular hours of eating and sleeping, rest before and after meals, abdominal exercises, the wearing of an abdominal support for relaxed abdomen (see Visceroptosis), frequent bathing, hot sitz-baths, and support of the clothing from the shoulders instead of from the hips. A daily morning saline is indicated for the relief of local congestion. A tonic containing iron, arsenic, quinine, or strychnine, may be of service. General massage is of value if it can be afforded.

℞ Elixiris ferri, quininæ, et strychninæ phosphati.... ℥iv
Sig.—One teaspoonful in half a glass of water, t.i.d

℞ Tincturæ nucis vomicæ.... ℥v (ɱx per dose)
Tincturæ gentianæ compositæ, q.s. ad..... ℥iv
M. Sig.—A teaspoonful in a quarter glass of water, t.i.d.

Prescribe digitalis for the heart, if required. Try thyroid extract cautiously for anæmic, fat, flabby women.

In order to reduce the size of the uterus, have the patient take a hot vaginal douche twice a day, and at bedtime insert far back against the cervix and vaginal vault by means of dressing forceps, a cotton-wool tampon saturated with glycerine and attached to a thread for removal the next morning. Twice a week the physician may puncture the cervix and withdraw from one-half to one ounce or more of blood, then dry thoroughly, paint the cervix and vaginal vault with tincture of iodine, and insert a glycerite of boroglycerine or an ichthyol glycerine (25 per cent.) tampon, which the patient should remove by an attached string the next day, followed by a douche. Iodoform ointment may be applied to erosions. Cysts should be opened (no more than six or eight at one sitting), and their walls cauterized with pure carbolic or nitric acid (Ashton). Local treatment should be intermitted during menstruation. Ergot, and quinine (gr. iii twice daily) may be of service in the inter-menstrual period for the purpose of stimulating uterine contraction. Digitalis and hydrastis may be of service for their action upon the circulation.

℞ Ergotin..... gr. iii
Pulveris digitalis..... gr. i
Quininæ sulphatis..... gr. ii
Strychninæ sulphatis..... gr. 1/30
M. et fiat pilula una. Mitte talis 30.
Sig.—One pill t.i.d. (Author?).

℞ Ergotin..... gr. ii
Hydrastininæ hydrochloridi..... gr. ss
M. et pone in capsula una. Mitte talis 30.
Sig.—One capsule four times a day. (Author?).

After the parts have been restored to a favorable state by the faithful employment of the above depletive measures, the uterus may be dilated and thoroughly curetted by means of Sims's and Martin's sharp curettes, the latter for the fundus and cornua, taking care not to perforate the uterus. Then irrigate the uterine cavity with hot water, or hot carbolic acid solution, 1 to 2 per cent., or lysol, 0.5 to 1 per cent., dry with gauze, and apply on a cotton-wound applicator, tincture of iodine, or silver nitrate, 5 to 10 per cent., or a saturated solution of iodine in 95 per cent. carbolic acid. Says Bandler: "in those cases in which the uterus is quite large and quite flabby, especially if the cavity of the uterus is large, and the walls thin and atonic, atmocausis (the application of steam at a temperature of 100 C.), carried out for half a minute to a minute after the curetting, has a splendid action in contracting the uterus and in promoting a serous exudation which greatly aids the subsequent involution of the uterus." Repair, resect, or amputate a lacerated and diseased cervix; repair a relaxed perineal floor. After curettage, apply close to the cervix a tampon soaked in glycerite of boroglycerine attached to a string, to be removed at the end of twenty-four hours, followed by a douche. The patient should be kept in bed two weeks, and the vagina douched twice daily with hot boric acid solution, ℥i to the pint, or the following:

℞ Acidi borici..... ℥vi
Acidi carbolici,
Pulveris aluminis exsiccati, aa..... ℥i
Olei gaultheriæ..... ℥i
Olei menthæ piperitæ..... ℥ss
M. Sig.—A tablespoonful in a gallon of water. (H. A. Kelly.)

Repeat the tamponade two or three times a week. If the uterus is displaced, try to replace it, after having employed the above described depletive measures, and retain it in place with a pessary (*q.v.*). One-third of the cases of displacement are cured in this way, (Kelly and Noble). Or, the uterus may be drawn forward by its round ligaments at the time of operation. In old intractable cases and those with tubo-ovarian involvement, perform hysterectomy.

Metrorrhagia.—See Menorrhagia and Metrorrhagia.

Micturition.—L. *micturi're*, to urinate. See Urination.

Miscarriage.—See Abortion.

Moist Warts.—See Verrucæ.

Movable Kidney.—See Splanchnoptosis in Part 1, General Medicine and Surgery.

Mucous Patches.—See Syphilis, in Part 1, General Medicine and Surgery.

Mulberry Excrescences.—See Verrucæ.

Mycosis of the Vagina.—Gr. *μύκης* fungus. See Vaginitis.

Vulva.—See Vulvitis.

Myoma Uteri.—Gr. *μῦς* muscle + *-ωμα* tumor. See Fibromyoma Uteri.

Vesicæ.—See Tumors of the Bladder.

Myxoma Vulvæ.—Gr. *μύξα* mucus + *-ωμα* tumor. See Tumors of the Vulva.

Nabothian Follicles.—See Cervicitis and Endocervicitis.

Nephralgia.—Gr. *νεφρός* kidney + *ἄλγος* pain. See under Hæmaturia.

Nephritis, Suppurative.—Gr. *νεφρός* kidney + *-ιτις* inflammation; L. *sub*, under + *pus, pu'ris*, pus. See Pyelonephritis, in Part 1, General Medicine and Surgery.

Nephrolithiasis.—See Part 1, General Medicine and Surgery.

Nephroptosis.—Gr. *νεφρός* kidney + *πτῶσις* falling. See Splanchnoptosis, in Part 1.

Neuralgia of the Bladder.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See Bladder Irritability.

Kidney.—See under Hæmaturia.

Neuroma Vulvæ.—Gr. *νεῦρον* nerve + *-ωμα* tumor. See Tumors of the Vulva.

Neurosis of the Bladder.—Gr. *νεῦρον* nerve. See Bladder Irritability.

Noma Pudendi.—Gr. *νομή* feeding; L. *puden'dum*, from *pude're*, to be ashamed. See Gangrene of the Vulva.

Obesity.—See Part 1, General Medicine and Surgery.

Obstruction.—L. *obstruc'tio*. See Atresia.

Œdema of the Vulva.—Gr. *οἴδημα* swelling; L. *vulv'a*. **Etiology.**—Renal insufficiency; cardiac disease; varicose veins; labial inflammation; traumatism; angioneurotic œdema; pressure upon the pelvic veins in pregnancy, etc.

Treatment.—Attend to the cause. When due to venous obstruction, the usual cause, enjoin rest in bed with the hips elevated, and the occasional assumption of the knee-chest posture. Hot applications may be made. In extreme cases, the fluid may be evacuated by means of multiple incisions, with strict aseptic precautions, and sterile boric acid powder applied on lint.

Oliguria.—See Anuria, in Part 1, General Medicine and Surgery.

Oöphoritis.—Gr. *ὠόν* egg + *φορεῖν* to bear + *-ιτις* inflammation. See Pelvic Inflammatory Disease.

Osteoma Vulvæ.—Gr. *ὀστέον* bone + *-ωμα* tumor. See Tumors of the Vulva.

Ovarian Abscess.—L. *ova'rium*. See Pelvic Inflammatory Disease.

Cysts.—See Ovarian Tumors and Cysts.

Inflammation.—See Pelvic Inflammatory Disease.

Prolapse.—See Prolapsus of the Ovary.

Tuberculosis.—See Tuberculosis of the Genital Organs.

Ovarian Tumors and Cysts.—L. *ova'rium*; *tu'mere*, to swell; Gr. *κύστις* bladder. Solid tumors (fibroma, myoma, sarcoma, carcinoma, syncytioma, benign papilloma) are rare, constituting about 5 per cent. of all ovarian tumors (Dudley). Ovarian cysts are either unilocular or, more commonly, multilocular. They may be follicle cysts (large or small), or corpus luteum cysts (small), or cystadenomata, simple or papillary (the largest and commonest of ovarian cysts, sometimes becoming malignant), or dermoid cysts (sometimes becoming malignant). Cystadenoma is usually fatal within three years unless operated upon.

Parovarian cysts, large hydatids of Morgagni, and the rare ovarian hydrocele (communication between the abdominal ostium of the dilated fallopian tube and a cyst) are scarcely to be distinguished clinically from ovarian cysts.

Treatment.—Very small, benign, symptomless tumors of the ovary require no treatment. Others require removal, *i.e.*, ovariotomy, or if conservative measures are desirable, the puncturing of small cysts and the excision of large ones, with closure of the wound by a continuous suture of fine catgut. In performing ovariotomy, papillary cysts should not be tapped, if possible, for fear of infecting the peritoneum with new growths.

The occurrence of inflammation, hemorrhage, torsion of the pedicle, or rupture, with their resulting acute symptoms, demands immediate ovariotomy.

Ovaritis.—See Pelvic Inflammatory Disease.

Ovary, Affections of the.—See Ovarian Affections.

Oxaluria.—L. *ox'alas*, oxalate + *uri'na*, urine. See under Nephrolithiasis, in Part 1, General Medicine and Surgery.

Painful Coitus.—See Vaginismus.

Pain, Intermenstrual, Periodic.—See Intermenstrual Pain, Periodic.

Pain, Menstrual.—See Dysmenorrhœa.

Pain on Urination.—See Dysuria.

Papilloma Vesicæ.—L. *papil'la*, nipple-shaped elevation + Gr. *-ωμα* tumor. See Tumors of the Bladder.

Papilloma Vulvæ.—See Verrucæ.

Paralysis and Paresis of the Bladder.—Gr. *παρά* beside + *λύειν* to loosen; *πάρεσις* relaxation. Paralysis of the detrusor musculature with unimpaired tonicity of the sphincter causes complete retention of urine. Paralysis of the sphincter causes incontinence or overflow, the urine lying below the level of the sphincter being retained (incomplete retention). Simple muscular atony is characterized by a frequent desire but weakened power to urinate, and increased capaciousness of the bladder, as shown by percussion, catheterization, and the passage during urination of an abnormal amount of urine.

Etiology.—Overdistention of the bladder (see Retention of Urine); injury of the bladder; arteriosclerosis of the vesical vessels; severe parenchymatous cystitis leading to sclerosis; comatose states; shock; operations; fevers; cerebral or spinal disease or injury, *e.g.*, general paresis, tabes, fracture of the vertebral column, compression of the cord by hemorrhage or exudate; myelitis; disseminated sclerosis, hemiplegia, hysteria, etc.

"The Prognosis is by no means bad in all cases," says Casper. The condition predisposes to cystitis and stone.

Treatment.—Attend to the cause. Unless cystitis is present, manual expression of the urine should be practiced every six hours, by means of the fingers of both hands grasping the bladder from above, and the thumbs resting on the symphysis pubis, the fingers being pressed downward and inward (Ortner). If manual expression is unsuccessful, catheterize the bladder regularly, twice or thrice daily, and guard against infection by an occasional irrigation with hot boric acid solution, ʒi–iv ad Oi, or silver nitrate, 1 : 5000 to 1 : 1000, and perhaps urotropin by mouth (see Part 11).

To restore muscular tone, employ abdominal and spinal massage, vibratory and manual; galvanization or faradization of the bladder, with one electrode over the bladder and the other (a metal sound covered with the exception of the tip with hard rubber) within the bladder or vagina; and strychnine in large doses, and perhaps ergot.

In organic nervous cases, such as tabes etc., the regular passage of full-sized dilators is recommended.

Parametritis; Pelvic Cellulitis.—Gr. *παρά* near + *μήτρα* womb; inflammation of the cellular tissue about the uterus. (See Pelvic Inflammatory Disease.)

Parovarian Cysts.—Gr. *παρά* near + L. *ova'rium*, ovary. See under Ovarian Tumors and Cysts.

Pediculosis Pubis; Crab-Lice.—See Part 5, Skin Diseases.

Pelvic Abscess.—L. *pel'vis*, basin. See Pelvic Inflammatory Disease.

Adhesions.—See Pelvic Inflammatory Disease.

Cellulitis; Parametritis.—See Pelvic Inflammatory Disease.

Congestion, Chronic.—See Congestion of the Pelvis, Chronic.

Hæmatocele.—See Extra-Uterine Pregnancy.

Pelvic Inflammatory Disease.—Under this caption are included pelvic lymphangitis, phlebitis, and cellulitis (parametritis), salpingitis, ovaritis, and pelvic peritonitis (perimetritis).

The acute stage is marked by more or less local pain, tenderness, muscle spasm, rapid pulse, pyrexia, perhaps chills, perhaps nausea and vomiting, perhaps painful urination and defecation. The symptoms may be very mild or very severe. In gonorrhœal infection the acute symptoms usually subside in three days. A diagnosis of the parts affected may be made by bimanual palpation. Pelvic cellulitis or parametritis is characterized by a boggy, often bulging mass in the lower portion of one of the broad ligaments or uterosacral ligaments; whereas in pelvic peritonitis the infiltrate is usually felt all around the uterus. In adnexal disease the tube or ovary or both are enlarged and tender.

In the chronic stage of pelvic inflammation the uterus and adnexa may be displaced and bound down by adhesions, and there are apt to be backache, local and radiating pain, constipation, painful defecation, painful coitus, frequent and painful urination, perhaps even gastric pain, especially if there are omental adhesions, dysmenorrhœa, menorrhagia, leucorrhœa, sterility, debility, etc. In chronic ovaritis (including the cirrhotic ovary) pain and tenderness are the chief symptoms. In tubercular salpingitis the tubes are indurated and nodular.

Etiology—Vulvo-vaginitis; cervicitis or endocervicitis; endometritis; metritis; cervical laceration; perineal laceration; uncleanly manipulations; gonorrhœa; tuberculosis; syphilis; puerperal infection; acute infectious diseases; infection from the intestines, bladder, peritoneum, or general circulation; appendicitis; infected ovarian and uterine tumors and cysts; suppurating broad-liga-

ment hæmatoma or pelvic hæmatocele resulting from ectopic gestation. Chronic pelvic congestion (*q.v.*, for causes), rheumatism, gout, alcoholism, and over-exercise or taking cold during menstruation, act as predisposing causes. Ovaritis alone may be caused by arsenic and phosphorus poisoning, acute suppression of the menses, adhesion to the intestine, the exanthemata, mumps, rheumatic fever, pneumonia, cholera, tonsillitis, etc.

The chief microörganisms concerned are the gonococcus, staphylococci (albus, aureus, and citreus), streptococci, colon bacillus, tubercle bacillus, diphtheria bacillus, pneumococcus, typhoid bacillus, and actinomyces.

Treatment.—I. Acute Inflammation.—Put the patient to bed in a well-ventilated room with the head of the bed somewhat elevated. Apply to the hypogastrium an ice-bag or hot water bag or hot flaxseed poultices or turpentine stupes. Open the bowels freely by means of calomel followed by salines, or the latter alone, *e.g.*, Epsom salts, a tablespoonful of the saturated solution every one-half to one hour until the bowels are freely moved; or, according to Penrose, Rochelle salts, one-half to one teaspoonful dissolved in water every one to two hours "until mild purgation is produced." Two or three times daily give a prolonged hot vaginal douche, lasting about thirty minutes, of normal saline solution (℥i ad Oi), or lysol, 1 per cent., for the purpose of promoting the reaction of inflammation. Allow no food until the bowels have been thoroughly moved, the abdominal distention relieved, and appendicitis excluded. Then give liquids, and water freely, gradually increasing the diet as the patient improves. If appendicitis is suspected, and the abdominal distention, pain, nausea and vomiting are not relieved at the end of twenty-four hours, operate (Noble and Anspach). If, in the presence of pelvic cellulitis or peritonitis, fluctuation becomes manifest, or the temperature continues high, the pain severe, and the exudate increasing in size, make a free vaginal incision through the posterior vault, from side to side, with scissors, evacuate the pus, employ the finger gently to open up all pockets, and pack loosely with gauze or employ rubber tubing, as deemed best. Place the patient in the semi-sitting or Fowler position. The drain is gradually removed by the end of the fifth day. It should not be removed too early. If the abscess points in the groin, or in the loin, incise here. Do not operate too early, but wait until the infection has become localized, or in other words, until the resistive powers of the body have formed a barrier against the invasion of the enemy. These resistive powers are aided by the application of heat. The abdomen or pelvis should be opened without delay for all gross diseases of the tubes. Some advise the evacuation of tubal and ovarian abscesses through the vagina, while others deem it best to remove the diseased structures, if practicable, by way of the abdomen, followed if necessary by abdominal or vaginal drainage. Normal saline solution (℥i ad Oi) may be administered per rectum by Murphy's drop-method.

If the inflammation subsides without the necessity of operating, keep the patient in bed for the most part, as long as tenderness about the vaginal vault exists, keep the bowels active, and prescribe daily hot vaginal douches of normal saline solution lasting about fifteen minutes. Every third day paint the vaginal vault with tincture of iodine, and insert a boroglyceride pack, which should be removed at the end of twenty-four hours, followed by a douche (H. A. Kelly). Warm sitz-baths are of value.

In gonorrhœal salpingitis, after the disappearance of the acute symptoms, cœliotomy should be performed and the diseased tubes removed. If operation is declined, or is not feasible, keep the patient in bed and give hot douches until there is no pain on walking; then allow the patient up and insert glycerite of boroglycerine tampons three times a week (to be removed at the end of twenty-four hours), and prescribe daily hot vaginal douches (Noble and Anspach, but see also under Gonorrhoea.)

For the treatment of puerperal cases, consult Metritis.

II. Chronic Inflammation.—Evacuate walled-off abscesses per vagina, and later remove diseased structures through the abdomen. Open the abdomen for all gross diseases of the tubes.

In non-suppurative cases, where the uterus and adnexa are dislocated, and perhaps bound down by adhesions, employ, twice daily, hot sitz-baths and prolonged very hot vaginal douches, which may at times be followed immediately by vagino-abdominal massage, for the purpose of stretching adhesions and correcting displacements. The bladder and rectum should be empty when giving massage. Discontinue the latter if fever or pain results. Every third day, paint the vaginal vault and erosions with tincture of iodine, and

insert a boroglyceride or ichthyol and glycerine (25 per cent.) pack, to be removed at the end of twelve to twenty-four hours. If the uterus can be replaced, support it by means of a pessary (*q.v.*). Calomel, gr. $\frac{1}{20}$ to $\frac{1}{10}$, t.i.d., and also saline laxatives, and potassium iodide, are recommended to promote absorption (see Drugs, Part 11).

Enjoin a quiet life with frequent rest, no coitus, careful exercise out of doors, fresh air day and night, regular hours of eating and sleeping, rest before and after meals, a daily morning warm bath in a warm room before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel, regulation of the bowels, a nutritious non-stimulating diet, "no tea or coffee in neurotic cases," an abdominal binder for relaxed abdomen (*q.v.*), and support of the clothing from the shoulders instead of from the waist. General massage, practiced daily or thrice weekly, is very beneficial. A tonic may be desirable.

If faithful conservative treatment is insufficient, an operation may be required. Before opening the abdomen, curette the uterus, and if required perform trachelorrhaphy or resection or amputation of the cervix (see Cervical Lacerations). The intra-abdominal measures demanded may be removal of adhesions; restoration of the patency of the abdominal tubal ostium (rarely permanently effectual); resection of portions of the ovary ("may be followed by great benefit"—E. E. Montgomery); replacement of a displaced uterus; single or double salpingectomy or salpingo—oöphorectomy; hysterectomy. Tuberculosis of the reproductive organs calls for hysterectomy.

Pelvic Lymphangitis.—L. *lym'pha*, lymph + Gr. ἀγγεῖον vessel + -ιτις inflammation. See Pelvic Inflammatory Disease.

Peritonitis; Perimetritis.—Gr. περί around + τείνειν to stretch. See Pelvic Inflammatory Disease.

Phlebitis.—Gr. φλέψ vein + -ιτις inflammation. See Pelvic Inflammatory Disease.

Perimetritis; Pelvic Peritonitis.—Gr. περί around + μήτρα uterus + -ιτις inflammation. See Pelvic Inflammatory Disease.

Perinephric Abscess.—Gr. περί around + νεφρός kidney. **Symptomatology.**—Local pain, tenderness and swelling; irregular pyrexia; leucocytosis; flexion of the trunk toward the affected side; flexion of the thigh; pain in the knee. There is a resemblance to hip disease (*q.v.*, in Part 10, Orthopædics). The aspirating needle may be employed in doubtful cases.

Etiology.—Kidney infection (calculous or other variety of pyelitis or pyelonephritis, pyonephrosis, metastatic abscess, tuberculosis); pelvic inflammatory disease in either sex; abscess of the liver, gall bladder, appendix, rectum, psoas muscle-sheath; duodenal ulceration; empyema; spinal tuberculosis; peripheral infections (furuncle, tonsillitis, etc.); infectious diseases (typhoid fever, measles, scarlet fever, influenza, gonorrhœa, puerperal infection, etc.); traumatism (contusion, penetrating wound, heavy lifting, hard riding, sudden strain); foreign body from the intestines; diabetes; general debility.

Treatment.—Make a free incision and gently explore the abscess cavity with the finger, in search of an appendix or other source of infection. If the kidney is diseased, it should be incised; and if it is mostly destroyed, it should be removed. A tuberculous kidney should be removed. Drain the evacuated abscess cavity. Irrigation with hot normal saline solution (℥i ad Oi) may or may not be advisable.

The Prognosis is usually good.

Periodic Intermenstrual Pain.—See Intermenstrual Pain, Periodic.

Peritonitis, Pelvic.—See Pelvic Inflammatory Disease.

Pessaries.—L. *pessa'rium* (See under Retro-displacement).

Phlebitis, Pelvic.—See Pelvic Inflammatory Disease.

Phosphaturia.—Phosphate + Gr. οὖρον urine. See under Nephrolithiasis, in Part 1, General Medicine and Surgery.

Physometra.—Gr. φῦσα gas + μήτρα uterus. See Atresia of the Cervix.

Pointed Condylomata.—Gr. κόνδυλωμα wart. See Verrucæ.

Polycystic Kidney.—Gr. πολύς many + κύστις cyst. See Tumors of the Kidney,

Polypi of the Cervix.—Gr. πολύς many + + πούς foot; L. *cer'vix*, neck. A cervical polypus may be fibroid, papillary, or mucous. The latter, a result of inflammation, is the commonest. Examine microscopically for malignancy. Menorrhagia, metrorrhagia, dysmenorrhœa, and leucorrhœa are common symptoms.

Treatment.—Twist or cut away pedunculated polypi. The hemorrhage, which is not alarming, may be checked by means of gauze or hot douching. Excise sessile polypi well below the base of the growth into the healthy tissue of the cervix, and close the wound with interrupted sutures (see also under Fibromyoma Uteri).

Polypi of the Urethra.—See Tumors of the Urethra.

Polypi of the Uterus.—See Fibromyoma Uteri.

Polypoid Endometritis.—Polypus + Gr. εἶδος form. See Endometritis.

Polyuria.—See Part 1, General Medicine and Surgery.

Precocious Menstruation.—See Menstruation, Precocious.

Pregnancy, Extra-Uterine.—See Extra-Uterine Pregnancy.

Premature Labor.—See Abortion, Miscarriage, and Premature Labor.

Proctitis and Sigmoiditis.—See Part 1, General Medicine and Surgery.

Profuse Menstruation.—See Menorrhagia and Metrorrhagia.

Prolapse of the Ovary.—L. *pro*, before + *la'bi*, to fall. The condition is diagnosed by the palpation of a painful prolapsed ovary.

Etiology.—Increase in weight of the ovary due to subinvolution (the commonest cause); chronic ovaritis; ovarian tumor; chronic debility causing relaxation of the ovarian supports; external violence; sudden strain; retrodisplacement of the uterus; adhesions; pelvic tumor.

Treatment.—Treat cases due to subinvolution or to debility as described under Chronic Metritis. The prolapse may often be cured, if no adhesions are present, by the persistent use of tampons inserted in the knee-chest posture. A pessary cannot be worn. Have the patient assume the knee-chest posture for ten or fifteen minutes three times a day, at the same time opening the vaginal orifice with the fingers so as to allow air to enter. She should sleep on her side or abdomen. The general health should receive attention.

If palliative measures fail, operate. If the ovary has dropped into Douglas's cul-de-sac, one may break through the thin part of the broad ligament between the fallopian tube and the round ligament, bring the ovary through the opening, and close the latter by suture (E. E. Montgomery). The infundibulo-pelvic ligament may be sutured above the brim of the pelvis. If the ovary is diseased, resect the diseased portion or perform salpingo-oöphorectomy.

Prolapse of the Rectum and Anus.—See Part 1, General Medicine and Surgery.

Prolapse of the Urethral Mucous Membrane.—See Eversion of the Urethral Mucous Membrane.

Prolapsus Uteri.—L. *pro*, before *-la'bi*, to fall; *ut'erus*, womb. Three degrees of descensus are recognized, 1st degree, uterus in extreme retroversion; 2d degree, cervix descended to the vulva; 3d degree, uterus partially or wholly protruding from the vulva.

Symptomatology.—Abdominal and pelvic pains, the latter dragging in character, and extending to the thighs; vesical and rectal disturbances; increased menstrual flow at first, later diminished flow; leucorrhœa; sterility; vaginitis.

Etiology.—Pregnancy, labor, and vaginal and perineal tears, producing relaxation of the uterine supports; increased weight of the uterus due to subinvolution, metritis, congestion, retained fluid, fibroids and other tumors, and pregnancy; uterine retrodisplacement; fecal accumulations, pelvic or abdominal tumors, and ascites, causing pressure from above; tight lacing; heavy clothing; heavy work and lifting; straining at stool; chronic cough; enlarged or habitually overdistended bladder; deformities of the vertebral column; vaginal cicatrices, congenital shortening of the vagina, and cervical or vaginal tumors, causing traction from below; senile atrophy of the pelvic floor, poor general health, causing relaxation of the supporting structures (visceroptosis); abnormally large pelvis.

Treatment.—Treat first degree of descensus as retrodisplacement (*q.v.*). One may try the Albert Smith or the Hodge pessary. A ring pessary may, however, be required. (Ashton.)

The patient's general health should receive attention in all cases, and correct hygiene should be observed, viz., adequate rest and exercise, fresh air day and night, plain, non-poisonous, nutritious food, regular hours of eating and sleeping, rest before and after meals, regulation of the bowels, a daily morning warm bath before breakfast in a warm room followed by a cold spinal douche and brisk rubdown with a coarse towel, an abdominal binder for relaxed abdomen (*q.v.*), and support of the clothing, which should be loose, from the shoulders instead of from the waist. A tonic may be desirable.

In advanced cases of prolapse, prepare the patient for radical operation by the following six to eight weeks treatment, which is designed to reduce congestion and render local and constitutional conditions more favorable for a successful result: Enjoin the observance of good hygiene as directed above. Replace the uterus with the patient in the knee-chest position (the bladder and rectum being first emptied), and retain it in place by means of tampons inserted daily and secured by a vulvar compress and T-bandage. Before each insertion douche

the vagina with hot normal salt solution (℥i ad Oi), or alum, ℥i to the pint, and dust ulcerations or excoriations with equal parts of boric acid and zinc oxide, or boric acid and alum, or any of the powders recommended under Vulvitis. Twice a week ulcers may be touched with silver nitrate, gr. x–xxx to the ounce. Massage of the pelvic organs is beneficial. The bowels should be kept soft with laxatives, *e.g.*, cascara sagrada, or compound licorice powder, or rhubarb (Part II). Three or four times daily the patient should assume the knee-chest posture for ten to fifteen minutes at a time. The clothing should be loose and supported from the shoulders, and an abdominal support should be worn.

Radical operative measures embrace dilatation and curettage of the uterus; repair, resection, or amputation of a lacerated and diseased cervix; repair of a torn perineum; anterior and posterior colporrhaphy; ventral suspension or fixation of the uterus; shortening of the broad, round, and utero-sacral ligaments; supra-vaginal hysterectomy and fixation of the cervical stump to the abdominal wall; vaginal hysterectomy and fixation of the vagina to the broad ligaments by end-to-end approximation of their severed ends; interposition of the uterus between the bladder and the anterior vaginal wall, permissible after the child-bearing period; correction of diastasis of the recti muscles in pendulous abdomen.

Ventral fixation and hysterectomy are not always satisfactory. The former operation should be accompanied by efficient sterilization in order to insure against subsequent pregnancy. The "interposition" operation of Wertheim-Schauta, combined with perineorrhaphy, is indicated in elderly women who are approaching the menopause and where there is a marked cystocele. The patient should be rendered sterile. The operation is usually curative, but it is contraindicated if the uterus is very large or very small through senile atrophy.

If operation is refused, or is not feasible, or the patient desires children, employ a ring pessary, as large as is compatible with comfort; or a cup and stem pessary, if the cervix is not excoriated, attached to the waist by means of a T-binder; or colpeurynters; or tampons, which should fill the whole vagina. Pessaries and colpeurynters should be removed and cleansed at bedtime, and should be well oiled, say with zinc ointment before introducing into the vagina. A vaginal douche of hot water should be taken night and morning. Tampons may be dusted over with any of the powders enumerated under Vulvitis, and should be removed nightly. If the patient has passed the menopause, the vagina may be packed with gauze or oakum every several days.

PruritusVulvæ.—L. *prurir'e*, to itch; *vul'va*, vulva. **Etiology.**—Pelvic congestion due to constipation, sedentary life, tight lacing, pent-up sexual energy, excessive venery, pregnancy, menstruation, abdominal and pelvic tumors, cardiac, pulmonary, renal, hepatic, and splenic disease, uterine displacements, pelvic inflammatory disease; climacteric; uterine fibroids; cancer; tuberculosis; leucorrhœa; cervical polyp; cervicitis; endometritis; metritis; salpingitis; vulvar varices; traumatism; trichiasis; urethral stricture; urethral polyp or caruncle; vulvitis; vaginitis; pessaries; urethritis; vulvar syphilis; pediculosis; fleas; scabies; thrush (mycosis, characterized by white patches); herpes; zona; eczema; intertrigo; urticaria; kraurosis vulvæ; hemorrhoids; proctitis or sigmoiditis; anal fissure; anal fistula; rectal tumors, stricture, or foreign body; intestinal worms; vesical calculus; cystitis; uncleanliness; too frequent cleansing; medicinal substances or toilet preparations applied to the vulva; decomposition of sweat; incontinence of urine; very acid, alkaline, purulent, or saccharine urine; certain foods and drugs (tea, coffee, alcohol, tobacco, morphine, iodine, iodoform, etc.); gastro-intestinal toxæmia; dental caries; gouty or rheumatic diathesis; nephritis; diabetes; toxæmia of pregnancy; jaundice; heat; cold; congenital hyperæsthesia; nervous and psychical disturbance.

Treatment.—Endeavor to discover and remove the cause. Enjoin the observance of good hygiene, viz., adequate rest and exercise, fresh air day and night, regular hours of eating and sleeping, rest before and after meals, regulation of the bowels, a daily morning warm bath, in a warm room, followed by a cold spinal douche and brisk rubbing with a coarse towel, bland diet (excluding spices, condiments, acids, sauces, pickles, sweets, sausages, veal, fish, shellfish, tomatoes, strawberries, gooseberries, cabbage, cauliflower, cheese, fried foods, chocolate, beer, tea, coffee, excess of meat), water in abundance; and local cleanliness, by means of castile soap and hot water, followed perhaps by hot saturated boric acid solution (4 per cent.).

In pruritus due to urinary irritation (urethritis, cystitis, incontinence, very acid, alkaline, purulent, or saccharine urine, etc.), cleanse the parts after each urination, and

dust on subnitrate of bismuth and prepared chalk, equal parts (Penrose), or apply stiff vaseline containing 10 to 20 or more grains of menthol to the ounce. If the urine is highly concentrated (high s.g.), prescribe potassium acetate or citrate in large doses, with plenty of water and a skimmed milk diet, and prohibit alcohol, spices, and acids (Noble and Anspach). For over-acid urine prescribe liquor potassæ, or sodium bicarbonate, or potassium salts, and belladonna. For alkaline urine prescribe sodium or ammonium benzoate, or acid sodium phosphate or boric acid, or the mineral acids (see Part 11). For diabetic pruritus Simpson recommends the internal administration of sodium salicylate, gr. xv, in glycerine, every four hours:

℞ Sodii salicylatis..... ʒii
Glycerini..... ʒi
Aquæ, q.s. ad..... ʒiv
M. Sig.—Tablespoonful in water every four hours.

In pruritus due to irritating vaginal discharges, douche the vagina several times daily with sod. bicarb. and sod. biborate, aaʒss to the gallon of warm water, and place within the vagina a lamb's-wool and cotton tampon.

In the pruritus of pregnancy, enjoin rest, and prescribe tepid or hot douches of pot. permang., 1 to 3 per cent., or borax or tannin, ʒi to the pint. The parts may also be bathed with 1 to 2 per cent. cocaine solution in equal parts of alcohol and water. The vagina may be lightly packed with dry cotton covered with a powder to absorb secretions. If these measures fail, the vagina may be swabbed with 5 per cent. silver nitrate solution with the patient in the knee-chest posture, or the silver solution may be poured in through a cylindrical speculum, the latter slowly withdrawn, and the vagina douched with salt water. After the slough has separated, the douches are resumed. "A rigid milk diet is sometimes followed by excellent results," says J. W. Williams. In extreme, intractable cases, pregnancy must be terminated.

For post-menstrual pruritus are recommended hot douches of saturated boric acid solution (4 per cent.)

In trichiasis (inverted or ingrowing hairs), epilate the hairs or destroy their papillæ by electrolysis (see Hypertrichosis under Hair Diseases, in Part 5, Skin Diseases).

For thrush, dust the parts twice a day, after cleansing, with the following powder

℞ Acidi salicylici..... gr. ii
Pulveris camphoræ..... gr. iv
Acidi borici..... ʒvi
Pulveris amyli..... ʒii

or employ a saturated solution of potassium chlorate (H. A. Kelly).

For pediculosis pubis the following is highly recommended by Noble and Anspach:

℞ Hydrargyri bichloridi..... gr. iv
Alcoholis,
Ætheris, aa..... ʒii

Local Antipruritic Remedies:

℞ Pulveris camphoræ..... gr. iv
Mentholis..... gr. x
Acidi carbolici..... gr. xxv
Adipis lanæ hydrosi..... ʒi
(H. A. Kelly.)

℞ Liquoris plumbi subacetatis.... ʒii
Tincturæ opii..... ʒii
Liquoris calcis..... ʒvi

℞ Thymolis..... gr. xlviii
Petrolati..... ʒi
(Gottschalk.)

℞ Chlorali hydrati,
Camphoræ, aa..... ʒi
Tere una ad liquorem, dein adde cum tritu (rub together until an oil is formed, and add)
Unguenti aquæ rosæ..... ʒi
Misce et fiat unguentum.

℞ Acidi acetici..... ʒi
Glycerini..... ʒiii
(Goodell.)

℞ Potassii hydratis solutionis, 7 per centum.
Sig.—Apply with a brush. (Scanzoni.)

℞ Olei terebinthinæ..... ʒiv
Petrolati mollis, q.s. ad..... ʒi
(W. B. Small.)

℞ Argenti nitratis..... gr. v–x
Spiritus ætheris nitrosi..... ʒi

℞ Argenti nitratis solutionis, 1 per centum.
Sig.—Soak for hours at a time. (H. A. Kelly.)

℞ Aquæ laurocerasi. (H. A. Kelly.)

℞ Potassii permanganatis, 0.5 to 1.0 per cent.

℞ Tincturæ benzoinæ compositæ.
Sig.—Paint on every night. (Crocker.)

℞ Ichthyolis, 5 per cent. lotion, or 10 per cent. ointment.

℞ Unguenti picis liquidæ.

℞ Chloroformi..... ʒss–i
Petrolati..... ʒi

℞ Aquæ chloroformi.

℞ Cocainæ, gr. i–x, ad lotionem vel unguentum ʒi.

℞ Balsami Peruvianæ, q.s.
Petrolati, q.s.

Lavage of the vulva by means of a pad of absorbent cotton dipped in boiling hot water containing three or four tablespoonfuls of vinegar to the quart, followed by talcum powder, gives prompt but usually only transient relief (Dechaux). Hot sitz-baths may be of service. The X-rays (light exposure with a hard tube every one to three days) are highly recommended. Gal-

vanism with the anode in the vagina and the cathode (cotton wet with salt solution) moved all over the affected parts, and using a current as strong as can be borne, is very highly recommended. Shaving the parts, under an anæsthetic, and scrubbing off the epidermis with soap and brush, avoiding hemorrhage, is advocated by C. Ruge. Says Hirst: "The best single remedy I have found is a strong solution of carbolic acid in cream, ℥ss to ℥i, followed by cold cream."

If all other measures fail, resort to linear scarifications or superficial cauterization or excision of the diseased tissues, or resection of all the sensory nerves (see Kelly and Noble: *Gynæcology and Abdominal Surgery*, Vol. I, p. 329).

Internal Antipruritic Remedies.—Tincturæ cannabis indicæ, ♏v, increased to ♏xx–xxx, well diluted, t.i.d.p.c.

Pilocarpinæ hydrochloridi vel nitratis, gr. 1/12 to 1/10, or sufficient to produce slight perspiration, to be repeated when the effect wears off.

Tincturæ gelsemii, ♏x, in water, every half hour until ℥i has been administered, unless toxic symptoms (see Part 11) appear.

Antipyrine, phenacetin, acetanelid, lactophen, bromide, chloral, valerian, belladonna, lupulin, strychnine, calcium chloride, arsenic, quinine in large doses (see Drugs, Part 11).

Puerperal Infection.—L. *pu'er*, boy + *par'ere*, to bear. See Metritis.

Pyelitis.—See Pyelonephritis, below.

Pyelonephritis.—See Part 1, General Medicine and Surgery.

Pyometra.—Gr. *πύον* pus + *μήτρα* womb. See Atresia of the Cervix.

Pyonephrosis.—Gr. *πύον* pus + *νεφρός* kidney. See Pyelonephritis.

Pyuria.—See Part 1, General Medicine and Surgery.

Rectal and Anal Tumors.—L. *rec'tum*, straight; L. *a'nus;* L. *tu'mere*, to swell. See Part 1, General Medicine and Surgery.

Rectal Cancer.—See Rectal and Anal Tumors, in Part 1, General Medicine and Surgery.

Fistulæ.—Consult gynæcological textbooks.

Inflammation.—See Proctitis, Part 1.

Prolapse.—See Prolapse of the Rectum and Anus, in Part 1.

Stricture.—See Part 1.

Tumors.—See Rectal and Anal Tumors, in Part 1.

Ulcer.—See Proctitis, in Part 1.

Rectitis.—See Proctitis, in Part 1.

Rectocele.—L. *rec'tum* + Gr. *κήλη* hernia. See Prolapsus Uteri.

Recto-Vaginal Fistulæ.—Consult gynæcological textbooks.

Renal Abscess.—L. *rén*, kidney. See Pyelonephritis, in Part 1.

Artery, Aneurysm of the.—See Aneurysm of the Renal Artery.

Calculus.—See Nephrolithiasis, in Part 1.

Cancer.—See Tumors of the Kidney.

Colic.—See Nephrolithiasis, in Part 1.

Cysts.—See Tumors of the Kidney.

Epistaxis.—See under Hæmaturia.

Fistula.—See Fistula, Renal.

Hemorrhage.—See Hæmaturia.

Inflammation.—See Bright's Disease, and also Pyelonephritis, in Part I, General Medicine and Surgery.

Injuries.—See Kidney Injuries.

Stone.—See Nephrolithiasis, in Part 1.

Traumatism.—Gr. *τραῦμα* wound. See Kidney Injuries.

Tuberculosis.—See Tuberculosis of the Kidney.

Tumors.—See Tumors of the Kidney.

Retention of Urine.—L. *retenti'o; uri'na.* The condition may be acute or chronic. Acute retention is accompanied by great pain. In chronic retention, dribbling of urine is an important early symptom. Inspection and percussion reveal a distended bladder.

Etiology.—Congenital occlusion of the meatus; inflammation of the neck of the bladder; prolonged voluntary retention; effusion of blood within the bladder; urethral stricture; pelvic tumors (fibromyoma uteri, carcinoma, sarcoma, cysts, etc.); vesical tumor; urethral tumor; impacted stone or foreign body; displacement of the pregnant uterus; exostosis of the pelvic bones; fecal accumulation; peritonitis; appendicitis; paravesical inflammation; atony of the bladder, due to arteriosclerosis of the vesical vessels, severe parenchymatous cystitis leading to sclerosis, and unknown causes; paralysis or paresis of the bladder, due to cerebral or spinal disease or injury, overdistention or injury of the bladder, operation, shock, hysteria, fevers (malaria, diphtheria, scarlet fever, typhoid fever); vesical spasm (see Bladder Irritability); vaginitis; fibrosclerosis or stricture of the neck of the bladder; valves at the neck of the bladder; contusion or laceration of the abdomen, bladder, or urethra; operations within the pelvis, in the rectum, or along the genito-urinary tract, causing sphincteric spasm; parturition; strangulated hernia; masturbation and nymphomania; sudden chilling of the body.

Treatment.—In acute retention, employ hot applications to the hypogastrium and peri-

neum, hot vaginal lavage, or a hot hip-bath, and have the patient attempt to urinate while in the bath. At the same time administer hot drinks, and perhaps morphine and atropine hypodermically for the purpose of relaxing sphincteric spasm. The sound of trickling water may be helpful. If these measures fail, resort to catheterization. If the bladder is extremely distended, do not withdraw all the urine at once, for fear of hemorrhage and collapse, but wait a few hours before emptying the bladder; or empty the bladder very slowly, allowing no less than twenty minutes for its complete evacuation. Then wash it out with warm boric acid solution, ʒi–ii to the pint, if deemed advisable, and administer urotropin. Continue the hot applications to the hypogastrium and perineum, and give a brisk purgative (calomel, or castor-oil.)

To evacuate clots, insert a large glass or metal catheter, and irrigate with hot salt or alum solution, ʒi ad Oi; or hot phenol solution, 1 per cent.; or cool sodium bicarbonate solution. Rest in bed is essential. Opium, fluid extract of ergot, hydrastis, stypticin, and fl. ext. senecio aureus may be useful (see under Hæmaturia).

For the consideration of atony and paralysis or paresis of the bladder, see Paralysis and Paresis of the Bladder.

For the consideration of vesical spasm, see Bladder Irritability.

Retrodisplacement of the Uterus; Retroflexion, and Retroversion.—L. *ret'ro*, backward; *flexu's*, bent; *versio*, turning. **Symptomatology.**—Pelvic pain or discomfort or heaviness or dragging sensations, especially marked on walking or standing; backache; headache (particularly vertical); constipation and difficult or painful defecation; frequent and painful urination; menorrhagia, metrorrhagia, and prolonged menstruation; dysmenorrhœa; leucorrhœa; amenorrhœa; frequent abortions; sterility; anæmia; digestive and nervous disturbances; general debility.

Before making a bimanual examination, always see that the bladder and rectum are empty; and employ by preference the left hand in the vagina or rectum. Use a uterine sound or probe if a tumor or inflammatory mass causes confusion as to the location of the uterus.

Etiology.—Relaxed vaginal outlet; subinvolution or chronic metritis; fibroids in the fundus; intrapelvic tumors; traction from inflammatory adhesions; tight lacing; "heavy clothing suspended from the waist"; habitual bending forward of the body at a bench or table; increased intra-abdominal pressure caused by growths or the accumulation of fat in the omentum and mesentery; use of a tight abdominal binder after labor; "lying upon the back too long after confinement"; sudden muscular effort, straining at stool, lifting, a fall (particularly upon the buttocks), and active exertion; repeated pregnancies causing overstretching of the musculature; chronic cystitis causing contraction of the bladder and consequent shortening of the vesico-vaginal septum; habitual overdistention of the bladder or rectum, the former pushing the fundus backward, the latter pushing the cervix forward; general debility (visceroptosis); congenital anomaly (rare).

Treatment.—According to Ashton, recent cases, of less than a year's duration, are possibly amenable to conservative treatment, while chronic cases of over a year's duration demand operative treatment.

About 15 per cent. or more of the cases are claimed to be cured by pessaries.

Conservative Treatment (often only palliative).—The uterus may be replaced, unless it is fixed by adhesions or is too large or too tender, by either the bimanual method or the knee-chest method.

Bimanual method: The bladder and rectum being empty, the clothing loose, and the patient in the dorsal position, the following manœuvre may be employed. With the fingers of one hand in the vagina, push up against the fundus uteri, while with the fingers of the other hand on the abdomen, get behind the fundus in order to bring it forward, at the same time pushing against the anterior surface of the cervix with the internal fingers so as to push the latter upward and backward. H. A. Kelly draws the cervix down with tenaculum forceps grasping its anterior lip, then with a finger in the rectum he pushes the fundus forward, then pushes the cervix well back into the pelvis, at the same time drawing forward the fundus with the fingers on the abdomen.

Knee-chest method: The bladder and rectum being empty, the clothing loose, and the patient in the knee-chest or the elevated knee-chest position, retract the perineum well with Simon's speculum; the uterus may then fall forward. If it does not, seize the anterior lip of the cervix with tenaculum forceps, and draw it forward; if the fundus does not then fall forward, push against its posterior wall with a ball of absorbent cotton held in dressing forceps. Then turn the patient cautiously on her back.

After replacing the uterus, insert a pack or pessary. Periuterine adhesions, pelvic inflammatory disease (pelvic tenderness), inflammation of the vagina, bladder, or urethra, prolapse of the ovary, and a relaxed pelvic floor, contraindicate the use of a pessary.

If the uterus is too large or tender to be replaced, or is fixed by adhesions, employ intravaginal pressure with glycerine tampons and massage, for the purpose of diminishing uterine congestion, stretching adhesions, and increasing the tonicity of the ligaments. Once to thrice weekly, with the patient in the knee-chest posture, insert into the posterior fornix a tampon of glycerite of boroglyceride or ichthyol-glycerine (10 to 15 to 25 per cent.), and hold in place by one or two or more pledgets of cotton followed by a tampon of wool. Attach strings to the tampons by which the latter may be removed by the patient at the end of eighteen to twenty-four hours. Have the patient employ, twice daily, in Sims's semiprone posture, a prolonged hot vaginal douche with potassium permanganate, 2 to 3 per cent.; or liquor sodæ chlorinatæ, one teaspoonful to the pint; or boric acid, one teaspoonful to the pint; or lysol, one teaspoonful to the quart; or formaldehyde, 1 : 4000; or salt solution, one teaspoonful to the pint; or the following:

℞ Acidi borici..... ℥vi
Acidi carbolici.....
Pulveris aluminis exsiccati, aa.. ℥i
Olei gaultheriæ..... ℥i
Olei menthæ piperitæ..... ℥ss
M. Sig.—A tablespoonful in a gallon of water. (H. A. Kelly.)

At bedtime she may take a hot sitz-bath of twenty minutes' duration, and on retiring should assume the knee-chest posture for ten or fifteen minutes, while holding the vagina open with the nozzle of a syringe so as to allow air to enter. She should sleep upon her abdomen. Twice a week, following a bath, vagino-abdominal massage may be practiced for two to five minutes, for the purpose of loosening and stretching adhesions. It is followed by a glycerine pressure tampon. Massage is contraindicated in the presence of acute or subacute periuterine inflammation.

Enjoin the observance of good hygiene, viz., adequate rest and exercise, abdominal exercises, no coitus if tenderness is present, fresh air day and night, plain, non-poisonous, nutritious food, regular hours of eating and sleeping, rest before and after meals, regulation of the bowels, a daily morning warm bath before breakfast in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, an abdominal binder for relaxed abdomen (*q.v.*), and support of the clothing from the shoulders instead of from the waist. A tonic may be desirable.

After all inflammation has subsided and adhesions have been stretched, an attempt may be made to replace the uterus by one of the methods above described. Dudley says: "The length of time that should elapse after an acute inflammation before manipulative reposition may be undertaken with safety is not less than two months. Pyosalpinx is always a contraindication."

If the uterus cannot be replaced (under anæsthesia if necessary) after two or three months of the above treatment, operate if feasible. Says Dudley: "In certain cases in which replacement is impracticable or impossible on account of inflammation or adhesions, a soft rubber ring may be inserted, and will sometimes give decided relief by lifting the uterus and pelvic floor nearer to the health level."

If the retrodisplaced uterus is pregnant, and cannot be replaced manually, have the patient assume (the bladder and rectum being empty) the knee-chest posture night and morning for gradually increasing periods up to twenty minutes, always followed by Sims's semiprone posture. Laparotomy is demanded in severe incarcerations when reduction cannot otherwise be effected.

Use of Pessaries.—The physician should keep on hand an assortment of hard rubber pessaries of various sizes and shapes. Kelly says that the ring pessary (no less than 6 mm. in thickness) is the most widely applicable; and that the Smith-Thomas-Mundè lever pessary comes perhaps next in usefulness. The Albert Smith, Hodge, and Thomas pessaries are also widely used. The Thomas retroflexion pessary with bulbous upper extremity, "is especially applicable in cases of great relaxation of the pelvic floor and of complicating prolapse of the ovaries," says Dudley. "The thick ring pessaries, the disc pessaries, the shell pessaries, and the bayonet handle pessaries (Menge) should be reserved," says Kelly, "for prolapsus cases." Schultze's sleigh pessary, Gehrung's and Skene's pessaries are employed for the correction of cystocele.

After replacing the uterus and pushing the cervix "far back and high up," measure the distance between the inner surface of the symphysis and the sacral promontory. This should be the length of the pessary

(lever pessary). If necessary, the anterior bar may be indentured to form an arch beneath the urethra. The pessary should be wide enough to fill out the posterior fornix (the distance the fingers can be separated) and of sufficient curvature behind the cervix. The anterior end should "disappear behind the symphysis" (Bandler).

The pessary should extend from the posterior fornix to the internal urinary meatus, *i.e.*, to where the "small transverse folds" of the anterior vaginal wall "become merged into the larger oblique folds of the vaginal walls." The curvature of a pessary may be altered by first oiling, then heating the pessary over an alcohol lamp, then bending and plunging in cold water.

"A pessary should fit snugly, but rather loosely." It should remain in place when the patient bears down in the upright posture. It should never cause pain.

The vagina should be cleansed and the bladder and rectum emptied before introducing a pessary, and the latter should be well lubricated. While wearing a pessary the patient should douche the vagina once or twice a day (night and morning) with plain hot water (adding no salt), or water containing sod. bicarb. and sod. biborate, aa℥i, and menthol, gtt. i, to each pint (Kelly); or she may insert a vaginal suppository of boroglyceride and gelatine, plain, or medicated with hydrastis, ichthyol, tannin, or alum. After each menstrual period for several months, and thereafter every two or three months, the pessary should be removed to see whether its surface has become roughened or it fits well or not (Kelly). It may be removed tentatively at the end of three or four months. Fifteen per cent. or more of cures are claimed for the pessary.

Radical operative measures for the cure of uterine retrodisplacements embrace dilatation and curettage; repair, resection, or amputation of a lacerated and diseased cervix; repair of a torn and relaxed vaginal outlet; ventro-suspension of the uterus by means of an artificial peritoneal ligament (Kelly); shortening of the round ligaments by drawing them through the abdominal wall (Gilliam); or through the canal of Nuck (Alexander); or by folding them behind the uterus (Webster); shortening of the uterosacral ligaments; removal of tumors, etc. The best results are usually obtained by some method of shortening the round ligaments. Alexander's operation, however, is applicable only rarely, in slight cases free from adhesions, tumors, and diseased appendages.

Following any form of operation, pregnancy should not be allowed for a year.

Retroflexion of the Uterus.—See Retrodisplacements.)

Retrolocation of the Uterus.—L. *re'tro*, backward + *loca'tio*, placement. **Etiology.**—Distended bladder; ante-uterine tumor; traction of peritoneal adhesions. (Dudley.) **Treatment.**—Attend to the cause. In post-inflammatory cases, bimanual massage and systematic tamponade of the vagina may restore the uterus to its normal position and mobility (see Pelvic Inflammatory Disease.)

Retroposition of the Uterus.—L. *ret'ro*, backward + *pos'itus*, placed. See Retrolocation, above.

Retroversion of the Uterus.—See Retrodisplacements.

Rupture of the Bladder.—L. *ruptu'ra* from *rum'pere*, to break. See Bladder Injuries.

Sacculation, Urethral.—L. *sac'culus*, little bag. See Dilatation of the Urethra.

Salpingitis.—Gr. σάλπιγξ tube + -ιτις inflammation. See Pelvic Inflammatory Disease.

Salpingo-oöphoritis.—Gr. σάλπιγξ tube + ὠόν egg + φορεῖν to bear + -ιτις inflammation. See Pelvic Inflammatory Disease.

Sapræmia.—Gr. σαπρός rotten + αἷμα blood. See under Metritis.

Sarcoma.—Gr. σάρξ, σαρκός flesh + -ωμα tumor. See under Tumors.

Scanty Menstruation.—See Amenorrhœa.

Senile Vaginitis.—L. *seni'lis*. See Vaginitis.

Sigmoiditis.—Gr. σίγμα letter Σ + εἶδος form. See Proctitis and Sigmoiditis in Part 1.

Skene's Glands, Abscess of.—See Gonorrhœa and Vulvitis.

Spasm, Vesical.—Gr. σπασμός spasm. See Bladder Irritability.

Splanchnoptosis.—See Part 1, General Medicine and Surgery.

Splenoptosis.—Gr. σπλήν spleen + πτῶσις fall. (See Splanchnoptosis, above.)

Stammering of the Bladder.—Irregular spasmodic urination. See Bladder Irritability.

Stenosis.—Gr. στένωσις narrowing or stricture. (See Atresia.)

Sterility.—L. *steril'itas*, barrenness. **Etiology.**—Sterility in the male (see Part 3, on Genito-Urinary Diseases); absent or rudimentary or maldeveloped genital organs, *e.g.*, atresia, imperforate or cribriform hymen, infantile vulva, abnormal backward location of the vulva, transverse vaginal septum, double vagina, shallow vagina, vesical or rectal vaginal outlet; elongated, shortened, or conical cervix, one cervical lip overlapping the external os, double

uterus, displacements of the uterus, excessively convoluted or lengthened tubes, tubal diverticula; operative removal of the uterus, tubes, or ovaries; uterine and ovarian atrophy; tumors of the genital organs (fibroids, polypi, cancer, ovarian cysts, etc.); microcystic degeneration of the ovaries; ovaritis; salpingitis, acute and chronic and its sequelæ; uterine atresia; hyperinvolution of the uterus; uterine displacements; metritis; endometritis; endocervicitis; pelvic adhesive peritonitis; atresia of the cervix; lacerated cervix; vaginitis, producing noxious secretions, adhesions, stenosis, shortening of the vagina, or dyspareunia; vaginal stricture following sloughing due to difficult labor; broken down vaginal outlet; hyperacid vaginal secretions; dyspareunia due to urethral caruncle, pruritus or kraurosis vulvæ, traumatism, tumors, stricture, vaginismus, vesico-vaginal fistula; genital tuberculosis; genital syphilis; conditions associated with menorrhagia (*q.v.*); overwork; debility; wasting diseases; anæmia; obesity; lithæmia; chronic alcoholism; morphinism; cocainism; diabetes; chronic nephritis; infective diseases (tuberculosis, syphilis, rheumatic fever, typhoid fever, scarlet fever, smallpox, cholera, mumps); advanced heart disease; hæmophilia; cretinism; exophthalmic goitre; habitual masturbation; violent psychic disturbances; impotence; sexual incompatibility; habitual abortion (*q.v.*). Gonorrhœa often causes "one-child sterility."

Hühner's test is as follows: Have the patient come to the office at least one hour after coitus. If at this time living spermatozoa are found in the vaginal secretions, the husband is probably potent. If dead spermatozoa are found, either the husband or the vaginal secretions may be at fault.

Treatment.—One should aim, of course, to correct the cause. The observance of good hygiene goes without saying, viz., adequate rest and exercise, fresh air day and night, a daily morning warm bath, before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, adequate nutrition, rest before and after eating, and regulation of the bowels. The regimen required for each patient depends, of course, upon her condition. Iron, arsenic, calcium glycerophosphate, ovarian extract, thyroid extract, etc., may be variously indicated (see Part 11).

An infantile or hypoplastic uterus may develop to normal in the course of months or years. Some recommend, beside the above hygienic regimen, daily hot douches, intra-uterine electricity, and the wearing of a cervical stem pessary, say the Wylie drain. The positive electrode of a galvanic battery is placed upon the abdomen and the negative electrode within the uterus. A weak galvanic current up to 50 milliampères for five minutes is employed two or three times weekly, followed by light uterine massage (Bumm). Many, however, condemn intra-uterine electricity as highly dangerous. Zekete recommends the use of a cervical stem pessary. He first dilates and curettes the uterus and swabs its cavity with tincture of iodine; then inserts the pessary which is held in place by gauze packing. The latter is changed each day. The patient is kept in bed eight days, and the pessary is worn for twenty days in all, being removed and cleansed two or three times. The use of an intra-uterine pessary, however, is attended by great danger of infection.

For cervical stenosis, Dudley's or Reynold's plastic operation may be indicated.

An elongated cervix may be amputated.

Metritis, pelvic congestion, and leucorrhœa may be treated as directed under Chronic Metritis. Gonorrhœal inflammation should be cured.

A shallow vaginal vault may perhaps be stretched by systematic tamponing.

Myomectomy may be effectual.

In chronic oöphoritis, E. E. Montgomery advises resection of portions of the ovarian structure.

If the vaginal secretions are hyperacid, instruct the patient to inject a solution of sod. bicarb., ℥ii to the quart of warm water, or milk of magnesia immediately before intercourse; and treat a possible gouty diathesis. Alkalies may be tried internally.

The hips may be elevated upon a pillow during copulation in order to facilitate the entrance of spermatozoa into the cervical canal.

Says Ashton: "The most frequent causes of sterility are tubal in origin"; and in some cases a plastic operation may be corrective. Says Hirst: "A thorough dilatation of the cervical canal cures more cases of sterility than any other single procedure."

Stone.—See Calculus.

Stricture of the Cervix.—L. *strictu'ra.* See Atresia of the Cervix.

Rectum.—See Rectal Stricture.

Ureter.—See Hydronephrosis.

Stricture of the Urethra.—Urination is slightly slower, more frequent, and more difficult. Partial retention and incontinence may occur. The diagnosis is made by means of the bougie-à-boule.

Etiology.—Urethritis; traumatism resulting from labor or operations; caustics; chancre; chancroid; tuberculosis; tumors; periurethral infiltration due to adjacent malignant disease, tumors or displacements of neighboring organs.

Treatment.—The treatment of cicatricial contraction embraces: (1) Forcible and gradual dilatation, under anæsthesia, at one sitting, up to one-half an inch, employing Hegar's uterine dilators; the latter being passed every three days thereafter for two weeks, and after that every four to six weeks by the patient herself; (2) Dilatation by gradual increments, every third day, with bougies, under local cocaine anæsthesia (10 per cent. applied on a pledget of cotton), until the urethra is stretched to half an inch; subsequent treatment the same as above; (3) Division of dense strictures, under general anæsthesia, with the knife or Otis's straight dilating urethrotome, followed by Hegar's dilators; (4) The making of an artificial urethro-vaginal fistula just behind the stricture, uniting the mucosæ with interrupted catgut sutures (after Ashton).

Stricture of the Uterus.—See Atresia of the Cervix.

Vagina.—See Atresia of the Vagina.

Vulva.—See Atresia of the Vagina.

Subinvolution.—L. *sub*, under + *involu'tio*, from in, into + *vol'vere*, to roll. See Metritis.

Suburethral Abscess.—L. *sub*, under + Gr. *οὐρήθρα* urethra. **Etiology.**—Inflammation of Skene's glands or of a urethrocele.

Treatment.—See under Gonorrhœa, and Vulvitis.

Superinvolution.—L. *su'per*, over + *involu'tio*, from *in*, into + *vol'vere*, to roll. See under Amenorrhœa.

Supplementary Menstruation.—L. *supplementar'ius*. See Menstruation, Vicarious.

Suppression of Menstruation.—L. *suppres'sio*. See under Amenorrhœa.

Suppurative Nephritis.—L. *sub*, under + *pus, pu'ris*, pus. See Pyelonephritis in Part 1.

Suprarenal Inclusion Tumor of the Kidney.—L. *su'pra*, above + *ren*, kidney; *inclu'sio*. See Tumors of the Kidney.

Syncytioma Malignum.—See Chorio-Epithelioma.

Syphilis.—See Part 1. General Medicine and Surgery.

Thrush.—See Vulvitis, and Vaginitis.

Traumatism.—Gr. *τραῦμα* wound. See Injuries.

Trichiasis of the Vulva.—Gr. *τριχίασις* ingrowing hairs. See under Pruritus Vulvæ.

Trigonitis.—Gr. *τρίγωνον* triangle + *-ιτις* inflammation. See Cystitis.

Tubal Pregnancy.—L. *tu'ba*. See Extra-Uterine Pregnancy.

Tuberculosis of the Genital Organs.—L. *tuberc'ulum*, nodule; *genita'lis; or'ganum;* Gr. *ὄ'ργανον*. **A. Vulva.**—Lupus vulgaris is a chronic, painless, granulomatous disease of the skin and mucous membranes, caused by the tubercle bacillus, and characterized by the occurrence of deep brownish-red or apple-butter colored nodules or tubercles and infiltrated patches, which either ulcerate or atrophy, leaving scars and disfigurement. Under pressure with glass, yellow spots are visible. A positive diagnosis is made by microscopic examination or animal inoculation. The disease usually begins in early life. It is rare in the New World, but common in Europe. It is rebellious to treatment, but usually responds eventually if treatment is persisted in. Recurrence, however, is common.

Treatment.—Fresh air day and night, adequate rest and exercise, and an abundant nutritious diet, with perhaps codliver oil, and such tonics as the syrupus ferri iodidi, the hypophosphites, glycerophosphates, and tinct. cinchonæ comp. are of the first importance. Thyroid extract is well recommended; also tuberculin (for details consult Tuberculosis, Pulmonary, in Part 1, General Medicine and Surgery).

The best local treatment is by means of the X-rays (*q.v.* Part 1). Stelwagon gives the following directions: "Give the first exposures cautiously with a tube of low to medium vacuum, at ten inches distance, and for five minutes, and at intervals of three to four days." "After a period of ten days to two weeks, if no susceptibility has been shown, the distance can be gradually reduced to three or four inches, and the time lengthened to ten or fifteen minutes, and the exposures made at more frequent intervals." "In those instances where moderate reaction has been purposely provoked and kept up, after a few weeks, treatment should be discontinued till this subsides, and in some cases improvement sets in and continues. The method should again be resumed as soon as improvement begins to lag." The healthy skin is protected with lead or tin foil. While employing radio-therapy, ulcers should be daily cleansed with mild antiseptics, such as boric acid solution, 3 to 4 per cent., or bichloride, 1 : 4000 to 2000, and continuous wet dressings applied; or perhaps ung. iodoformi, or ung. hydrargyri ammoniati, or ung. acidi carbolici may be deemed prefer-

able. Where there is an associated acute inflammation, calaminzinc oxide lotion may be applied until the inflammation subsides:

℞ Calaminæ,
Zinci oxidi, aa ..... ʒi–ii
Acidi borici ..... ʒi
Glycerini ..... ♏xxx
Acidi carbolici ..... gr. x
Liquoris calcis ..... ℥i
Aquæ, q.s. ad ..... ʒiv
M. Sig.—Shake well before applying.

Ulcers may be cauterized with lactic acid applied on a wad of cotton for ten to thirty minutes once or twice daily, using boric ointment, 10 per cent., in the intervals (Stelwagon).

If the disease is limited to the vulva, a wide excision may be practiced, and the wound closed with catgut sutures. Or if excision is not feasible, one may under general anæsthesia curette away the diseased tissues thoroughly with a small sharp spoon, looking well after the edges, followed by the application of pure carbolic acid, or pure nitric acid, or the actual cautery. Recurrent nodules may be bored out with a matchstick dipped in fuming acid nitrate of mercury (Crocker). Iodoform or tincture of iodine may be used as a dressing.

B. Vagina.—Excise the diseased parts, if no other organs are involved, and if practicable; otherwise employ the curette, etc., as described above. In the presence of stenosis, the scar tissue may be removed and the resulting wound sutured; then, after union has occurred, vaginal dilators may be employed until the danger of contraction is past.

C. Cervix.—If primarily and solely affected, amputate the cervix. If the uterus and tubes are involved, do a pan-hysterectomy. If this is not feasible, employ the treatment described under vulvar tuberculosis.

D. Uterus.—The diagnosis is made by a microscopic examination of the uterine scrapings. Do a pan-hysterectomy, if feasible; otherwise curette, and apply tincture of iodine, the latter to be repeated twice weekly, indefinitely. An iodoform (gr. v) suppository may be inserted into the uterus two or three times a week.

E. Fallopian Tubes and Ovaries.—The affection is usually bilateral. The ovaries are rarely affected. The tubes are indurated and nodular. Do a pan-hysterectomy, if feasible.

Tubes, Fallopian, Inflammation of the.—See under Pelvic Inflammatory Disease.

Tumors of the Bladder.—L. *tu'mor*, from *tu'mere*, to swell. **Varieties.**—Papilloma or villous tumor (the most common; it tends to become malignant, therefore examine the base microscopically for signs of malignancy); carcinoma (next in frequency, but rare); adenoma, fibroma, myoma, lipoma, angioma, enchondroma, sarcoma, chorioepithelioma, cysts (all very rare). Papilloma and carcinoma are often multiple as a result of contact inoculation.

Symptomatology.—Hæmaturia, usually abundant (the most important symptom); frequent micturition; pain; cystitis; sudden stoppage of the urinary stream (may also occur in stone); fragments of tumor in the urine. Make a bimanual and cystoscopic examination. A general anæsthetic may be required on account of pain.

Treatment.—Papillomata are best treated through a ureteral catheterizing cystoscope by means of the high-frequency current (fulguration L. *ful'gur*, lightning). If very many tumors are present, it may be necessary to open the bladder suprapubically and then employ fulguration. The technique is as follows: Distend the bladder with boric acid solution, and introduce the cystoscope. Through the catheter channel of the latter introduce a fulguration catheter connected with one pole of the electrical apparatus, and approach it to the tumor. The other electrode, in the form of a large flat plate, is placed under the buttocks if the tumor occupies the base of the bladder, and over the hypogastrium if the tumor is in the upper wall of the bladder. Apply the current to the pedicle of the tumor, if possible, otherwise begin the sparking at the periphery. A large pedunculated tumor may first be snared, and then the base fulgurated. The wire may either be inserted into the substance of the tumor, or brought almost in contact with it. Each application of the current may last from three to five minutes, or less, or until the part treated is thoroughly blanched. The whole tumor may be gone over in one sitting, or several sittings at intervals of ten to fourteen days may be required. Remember that a certain amount of local reaction follows this mode of treatment. It should not be mistaken for cancer. (Kretschmer.)

Casper advises against excision or resection operations where the tumor is benign and causes inconsiderable symptoms, and also in malignant cases unless "stanchless hemorrhage or intolerable and uncontrollable tenesmus exist," when a vesico-vaginal fistula should be made or a suprapubic cystotomy performed, and the bladder irrigated daily through the urethra with warm boric acid solution, ʒi to the pint.

The X-ray (*q.v.* in Part 1) may be tried in inoperable cases, and also following operation, in order to prevent recurrence, if possible. For the latter purpose, irrigation of the bladder once weekly, for at least a year, with a 5 per cent. solution of resorcin is also advised. Once or twice a year, for at least three years following operation, the bladder should be examined cystoscopically for possible recurrence.

For the relief of pain, strangury, and hemorrhage, employ rest, an ice-bag to the hypogastrium, and opiates with belladonna. For the treatment of severe hemorrhage, see under Hæmaturia.

Tumors of the Kidney.—The diagnosis is made usually only on exploratory operation.

1. Simple Cyst.—Characterized by slow growth unaccompanied by urinary symptoms.

Excise as much of the cyst as possible, and swab any remaining portions of its wall with pure carbolic acid; drain by means of a tube.

2. Hydatid or Echinococcus Cyst.—Slow-growth. Should the cyst rupture into the renal pelvis, the urine would contain hooklets and vesicles.

Incise the cyst, wash out its contents, and drain.

3. Polycystic Degeneration.—The symptoms and urinary changes are those of chronic interstitial nephritis, including cardiac hypertrophy and arteriosclerosis, together with kidney enlargement presenting an irregular lumpy surface. Hæmaturia is common. Pyuria may occur. It is often congenital and usually bilateral, therefore nephrectomy is contraindicated.

The treatment is that of chronic nephritis (*q.v.*, in Part 1, General Medicine and Surgery). Puncture of the cysts may be of use in controlling symptoms. (Rovsing).

4. Malignant Tumors (hypernephroma or suprarenal inclusion tumor, sarcoma, carcinoma).—Profuse hæmaturia, tumor, pain, and cachexia are the characteristic symptoms. Catheterize the ureters in order to ascertain the source of the bleeding and also the functional activity of the kidneys (see Urinalysis, Part 1).

The Prognosis is bad, with or without operation.

Perform nephrectomy, unless metastases have occurred.

5. Benign Tumors.—(fibroma, lipoma, adenoma, myoma, chondroma, osteoma, myxoma, angioma, lymphangioma, lymphadenoma, papilloma of the pelvis).

Benign tumors are very rare. They are likely to become malignant. Hæmaturia is unusual; enlargement of the kidney may be the only symptom. Nephrectomy is indicated.

Tumors of the Ovaries.—See Ovarian Tumors and Cysts.

Rectum.—See Rectal and Anal Tumors, in Part 1.

Tumors of the Urethra.—**Varieties.**—Papilloma (see Verrucæ); condyloma (see Verrucæ); angioma (see Urethral Caruncle); cyst (known as mucous polyp if pedunculated); fibroma; sarcoma; carcinoma (all three very rare); elephantiasis (*q.v.*; in Part 5, Skin Diseases).

Treatment.—Remove benign and pedunculated tumors with the cold or galvanocautery snare or scissors, and cauterize the base. Remove small multiple growths with the thermocautery. Excise large tumors (under general anæsthesia; first dilating the urethra with the cone dilator) with the knife in their long axis, and suture the cut surfaces with fine interrupted catgut.

In primary malignant disease, remove all the growth including the lymphatic structures extending to and including the glands of the groin; or employ radium or the X-rays, (see Part 1).

In non-pedunculated cysts of the urethra or vagina, snip off the superficial portion of the sac with scissors, and touch the base with pure carbolic acid.

Tumors of the Uterus.—See Cancer of the Uterus; Cervical Polypi; and Fibromyoma Uteri.

Tumors of the Vagina.—**Varieties.**—Cysts; fibroma or fibromyoma; sarcoma; carcinoma.

Cysts may be excised; or the superficial portion of the sac may be snipped off with scissors and the base touched with pure carbolic acid.

Do not excise growths during pregnancy or the puerperium, because of the danger of severe hemorrhage.

Tumors of the Vulva.—**Varieties.**—Varix (*q.v.*); hæmatoma (*q.v.*); elephantiasis (*q.v.*); cyst of a vulvo-vaginal gland; abscess of a vulvo-vaginal gland (see Vulvitis); hydrocele of the labium majus; verrucæ (*q.v.*); papilloma (see Verrucæ); lupus (*q.v.*, under Tuberculosis); lipoma; fibroma, or myofibroma; myxoma; osteoma; enchondroma; neuroma; angioma; sarcoma; carcinoma.

Benign tumors may be excised. A hydrocele, if irreducible, may be aspirated, and tincture of iodine injected. If this fails, the sac should be exsected.

In malignant disease, remove all the growth including the lymphatic structures

extending to and including the glands of the groin; or employ radium or the X-rays (see Part 1).

Ulcer of the Bladder.—L. *ul'cus.* See Cystitis.

Rectum.—See Proctitis.

Vagina.—See Vaginitis.

Vulva.—See Vulvitis.

Ureteral Calculus.—Gr. *οὐρητήρ* ureter; L. *calc'ulus,* pebble. See Nephrolithiasis, in Part 5.

Obstruction.—See Hydronephrosis.

Urethral Angioma.—Gr. *οὐρήθρα; ἀγγεῖον* vessel + *-ωμα* tumor. See Urethral Caruncle.

Carcinoma.—Gr. *καρκίνος* crab + *-ωμα* tumor. See Tumors of the Urethra.

Urethral Caruncle.—Gr. *οὐρήθρα;* L. *car-un'cula,* dim. of *car'o flesh;* a little fleshy tumor. Urethral caruncle designates a small painful vascular tumor of the urethra, associated with dysuria, and caused by irritating discharges (due to gonorrhœa, vulvitis, vaginitis, senile endometritis, etc.).

Treatment.—Benumb the mucous membrane with cocaine, 10 per cent., applied for ten minutes. If the tumor is pedunculated, draw it forward with toothed forceps, transfix the pedicle with needle and silk thread, tie both ways, then cut off the pedicle well beyond the ligature. If the growth is sessile, lift it up with toothed forceps, remove it well below the base, in order to avoid recurrence, and close the wound with fine interrupted catgut sutures. If it is large, dilate the urethra with a cone dilator, under general anæsthesia, and excise the tumor in the long axis of the urethra. The actual cautery is not advised.

Urethral Condyloma.—Gr. *κονδύλωμα* wart. See Verrucæ.

Cyst.—Gr. *κύστις* cyst. See Tumors of the Urethra.

Dilatation.—See Dilatation of the Urethra.

Diverticulum.—L. *diverticul'are,* to turn aside. See Dilatation of the Urethra.

Elephantiasis.—See Elephantiasis, in Part 5.

Eversion.—See Eversion of the Urethral Mucous Membrane.

Fibroma.—L. *fi'bra,* fibre + Gr. *-ωμα* tumor. See Tumors of the Urethra.

Inflammation.—See Urethritis.

Papilloma.—L. *papil'la,* nipple-shaped elevation + Gr. *-ωμα* tumor. See Verrucæ.

Prolapse.—L. *pro,* before + *lab'i,* to fall. See Eversion of the Urethral Mucous Membrane.

Urethral Sacculation.—L. *sac'culus,* little bag. See Dilatation of the Urethra.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Urethra.

Stricture.—See Stricture of the Urethra.

Tumors.—See Tumors of the Urethra.

Urethritis.—Gr. *οὐρήθρα* urethra + *-ιτις* inflammation. **Symptomatology.**—Frequent and painful micturition; if pus is present, it may be expressed from the urethra or from Skene's glands by pressure through the vaginal wall. Examine the discharge microscopically. See Gonorrhœa.

Etiology.—Gonorrhœa (the commonest cause); traumatism (especially in childbirth, sometimes due to the passage of a calculus, to chemical irritants, etc.); urethral tumors; foreign bodies; masturbation; coitus; prolonged ungratified sexual desire; concentrated urine; very acid or alkaline urine; unclean catheter, sound, hand or pessary; the acute exanthemata (measles, scarlet fever, smallpox); syphilis; tuberculosis; diphtheria; erysipelas; cystitis; pyelonephritis; vulvar, vaginal, or uterine discharges.

Treatment.—Attend to the cause. Salol, urotropin, sandalwood, copaiba, and cubeb may be of service (see Drugs, Part 11). If the urine is excessively acid, prescribe sod. bicarb. and potassium salts; if alkaline, prescribe sod. or ammon, benzoate, salol, boric acid, or acid sodium phosphate. Infusions of uva ursi and buchu are useful sedative diuretics. See Eversion of the Urethral Mucosa, for the treatment of this complication.

Urethrocele.—Gr. *οὐρήθρα* urethra + *κήλη* tumor. See Dilatation of the Urethra.

Urethro-Vesical Fissure.—See Vesico-Urethral Fissure.

Urinalysis.—See Part 1, General Medicine and Surgery.

Urinary Incontinence.—See Incontinence of Urine.

Retention.—See Retention of Urine.

Urination, Absent.—See Anuria.

Abundant.—See Polyuria.

Difficult.—See Dysuria.

Frequent.—See Polyuria.

Painful.—See Dysuria.

Scanty.—See under Anuria.

Uterus, Abscess of the.—L. *ŭterus,* womb.

I. Abscess within the uterine cavity, or pyometra, due to cervical atresia, congenital or acquired (see Atresia of the Cervix.)

II. Abscess within the uterine wall, due to puerperal infection, gonorrhœa, or traumatism.

Diagnosis is difficult or impossible, pyosalpinx being frequently diagnosed. A laparotomy should be performed, and if a

solitary abscess is found, with no involvement of the adnexa, the abscess should be simply evacuated and drained through the abdominal wall. If multiple abscesses are present, or if the adnexa are involved, or the patient has passed the menopause, hysterectomy should be performed.

Uterus, Anteflexion of the.—See Anteflexion of the Uterus.

Antelocation of the.—See Antelocation of the Uterus.

Anteversion of the.—See Anteversion of the Uterus.

Appendages of the.—See under Pelvic Inflammatory Disease; Ovarian Tumors and Cysts, and Prolapse of the Ovary.

Ascent of the.—See Ascensus Uteri.

Atresia of the.—See Atresia of the Cervix.

Cancer of the.—See Cancer of the Uterus.

Descensus of the.—See Prolapsus Uteri.

Displacements of the.—See Displacements of the Uterus.

Fibroid Tumors of the.—See Fibromyoma Uteri.

Hemorrhage from the.—See Menorrhagia and Metrorrhagia.

Inflammation of the.—See Metritis.

Inversion of the.—See Inversion of the Uterus.

Lateral Location of the.—See Lateral Location of the Uterus.

Prolapse of the.—See Prolapsus Uteri.

Uterus, Retrodisplacements of the.—See Retrodisplacements of the Uterus.

Retroflexion of the.—See Retrodisplacements of the Uterus.

Retrolocation of the.—See Retrolocation of the Uterus.

Retroversion of the.—See Retrodisplacements of the Uterus.

Subinvolution of the.—See Metritis.

Superinvolution of the.—See under Amenorrhœa.

Tuberculosis of the.—See Tuberculosis of the Genital Organs.

Tumors of the.—See Cancer of the Uterus; Cervical Polypi; and Fibromyoma Uteri.

Vaginal Atresia.—L. *vagin'a*, a sheath. See Atresia of the Vagina.

Cysts.—See Tumors of the Vagina.

Fistulæ.—Consult gynæcological textbooks.

Flatus.—See Garrulity of the Vulva.

Inflammation.—See Vaginitis.

Tumors.—See Tumors of the Vagina.

Ulcers.—See under Vaginitis.

Vaginismus.—Spasmodic contraction of the vaginal orifice upon attempted coitus or examination. The patient may have to be anæsthetized to be examined. During the examination, if nothing is discoverable, overstretch the vagina with the fingers. (H. A. Kelly.)

Etiology.—Neurotic temperament; local hyperæsthesia; masturbation; ineffectual attempts at coitus by an impotent husband; inflammation of the hymen, urethra, bladder, vulva, vagina, rectum, uterus, tubes, or ovaries; painful carunculæ myrtiformes; painful scar of the perineum or posterior vaginal wall; urethral caruncle; coccygodynia; neuroma of the fossa navicularis; varicose veins; prolapse of an ovary; unyielding hymen; too large penis; "displacement of the fourchette and vulvar orifice upwards and forwards"; uterine displacement; lead poisoning.

Treatment.—Attend to the cause. Treat fissures by divulsion and the application of silver nitrate solution, 10 per cent.; or make a linear dissection, and unite the cut edges with fine catgut (Kelly). Destroy sensitive papillæ with the electro-cautery needle (Hirst) . Remove a urethral caruncle (*q.v.*); etc. Prescribe a hygienic regimen for the strengthening of the nervous stamina. Correct hygiene embraces adequate rest and exercise, regular hours of eating and sleeping, rest before and after meals, nutritious food, no tea, coffee, or alcohol, regulation of the bowels, fresh air day and night, and a daily morning warm bath in a warm room, before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel. Have the patient sleep alone during the treatment, and take hot sitz-baths night and morning. The galvanic current (with the positive pole to the vulva), employed for four or five minutes at a time every two or three days for six or more weeks, is well recommended. The bromides may be of service for a time as a nervous sedative.

Gradual dilatation of the vaginal orifice may be practiced three or four times a week by means of a narrow bladed bivalve speculum, which is slowly opened after its introduction; or by means of graduated rectal bougies, warmed and lubricated, preceded by the application of cocaine solution, 5 per cent., for five minutes. The bougie should remain in place one hour, with the patient recumbent. It should be inserted at first every day; and later, at the patient's home, every other day.

If gradual dilatation is unsuccessful, one may resort to forcible bimanual dilatation

under anæsthesia, followed by the use of Sims's glass vaginal plug for a week, with the patient in bed, the plug being removed daily and the vagina douched. For two or three months thereafter the patient should insert the plug for one hour every night and morning. (Ashton.)

Or, incisions may be made through the levator ani muscles; or the internal pudic nerve resected (see Kelly's *Medical Gynæcology*, p. 290; Ashton's *Gynæcology*, p. 227; Keen's *Surgery*, Vol. v, p. 398).

"Normal pregnancy usually effects a cure," to facilitate which the cervix may be dilated.

In mild cases, it may be sufficient, before coitus, to apply on cotton a solution of cocaine, 4 to 10 per cent., for ten minutes, followed by vaseline.

Vaginitis.—L. *vagi'na*, sheath + Gr. *-ιτις* inflammation. **Symptomatology.**—Local swelling and redness, and a curdy or milky or creamy leucorrhœal discharge. A cervical discharge is stringy, glairy, viscid, thick, tenacious, and mucoid, like the white of an egg, or it is muco-purulent; an endometrial discharge is more serous. A microscopic examination may be made (see Gonorrhœa).

Etiology.—Gonorrhœa (*q.v.*); diphtheria (*q.v.*, in Part 1); vulvitis (*q.v.*); constitutional diseases (measles, scarlatina, varicella, anæmia, chlorosis, tuberculosis, constipation, debility); uncleanliness; unclean pessaries; lacerated perineum causing infection from the rectum; excessive masturbation or coitus; foreign bodies; uterine discharges occurring in cervical catarrh, cancer, sloughing myoma, etc. (see Leucorrhœa); dysenteric rectal discharges; pelvic congestion (*q.v.*); operations; senile changes (senile vaginitis, occurring after the menopause and characterized by the formation of adhesions); exposure to cold; fungi (aphthous vaginitis, characterized by the presence of white patches, and diagnosed with the microscope by the demonstration of mycelium and spores, after treating with a drop of liquor potassæ); traumatism; scabies; oxyuriasis; strong astringents (alum, silver nitrate, jequirity, etc.) producing exfoliation; fistulæ, gas-forming bacillus, producing gas cysts (emphysematous vaginitis); colpohyperplasia cystica, a rare cystic vaginitis characterized by the presence of numerous small cysts in the hypertrophied mucous membrane, of good prognosis, and occurring mostly in pregnancy.

Treatment.—Attend to the cause. In early or acute cases put the patient to bed for several days, on liquid and later soft diet and open the bowels. Have the patient douche the vagina for five to fifteen minutes, twice or thrice daily with a warm or hot solution of sodium chloride, ʒi to the pint; or sod. bicarb. and sod. biborate, of each ʒss to the pint; or boric acid, ʒi–ii to the pint; or alum, ʒi to the pint; or pot. permanganate, gr. ii–viii–xv to the pint; or bichloride, 1 : 5000; or the following:

℞ Olei menthæ piperitæ ..... ʒiss
Acidi carbolici ..... ʒiii
Aluminis pulveris ..... ʒi
Acidi borici ..... ʒiv
M. Sig.—One teaspoonful to one quart of water. (H. A. Kelly.)

If the pain and distress are great, insert a rectal suppository containing ext. opii, gr. i–ii, and ext. belladonnæ, gr. ¼. Cool (vasoconstrictor) or tepid (vasodilator) or hot (vasoconstrictor) sitz-baths may be taken once or twice daily for the relief of pelvic pain and distress. The discharge should be caught on cotton pads and the latter burned. The skin may be protected with boric ointment, 10 per cent., or less.

Once or twice a week, or on alternate days, the physician may introduce at the office (best through a Sims speculum in Sims's or the knee-chest posture) with long dressing forceps or Kelly's two-pronged packer, from a dish, tampons saturated with boroglyceride, or ichthyol glycerine, 5 per cent., or tannin-glycerine, 2 to 5 per cent., or argyrol, 25 per cent., or protargol, 2 per cent. Strings are attached to the tampons by which they are removed at the end of twenty-four hours, followed by a douche. If deemed of service, the entire vagina may be dusted, by means of a puff box, with one of the powders mentioned under Vulvitis. Apply to erosions twice a week pure carbolic acid, or tincture of iodine, or silver nitrate, gr. xxx to the ounce, or perhaps carbolized vaseline, 3 to 5 per cent., or boric ointment, 10 per cent., or ichthyol in lanolin, 25 per cent.

Astringent douches are useful in chronic vaginitis, *e.g.*, powdered alum and zinc sulphate, of each ʒss to the quart; or tannic acid and zinc sulphate, of each ʒi to the quart; or powdered aluminum acetate, ʒi to the quart; or pot. permanganate, 1 : 4000.

In intractable cases, one may apply through a Ferguson speculum, by means of a cotton swab, to all parts of the vagina including the cervix, a 5 to 20 per cent. solution of silver nitrate, or 50 per cent. argyrol, or liq. iodi comp., or 1 to 2 per cent. formaldehyde. Kelly paints on the silver nitrate until the whole surface is blanched white, then packs the vagina loosely with iodoform gauze, and keeps the patient in

bed for several days. After sloughing occurs (in a few days), hot pot. permanganate douches, 1 : 4000 are employed. The silver nitrate treatment should not be repeated within two to four weeks.

Senile vaginitis is treated as described above. Bandler recommends daily douches of pyroligneous acid, 3 to 5 drams to the quart. Ulcerated spots should be painted, twice a week, with silver nitrate, gr. xxx to the ounce. Kelly's cauterization may be employed. Glycerine tampons and ointments may be of service.

In mycotic vaginitis (thrush), employ boric acid douches, and apply to the patches through a Ferguson speculum, 1 per cent. corrosive sublimate or 3 per cent. carbolic acid. Cleanliness is essential for prevention and cure.

In cystic vaginitis, prick the vesicles, and douche with boric acid solution. The disease disappears of itself after delivery.

In vaginitis due to constitutional diseases, employ a daily mild cleansing douche, say of boric acid solution, ℥i to the pint.

Varix Vulvæ; Varicose Veins of the Vulva.—L. *va'rix*, pl. *va'rices*, swollen, tortuous vein. **Etiology.**—Pregnancy; abdominal or pelvic tumors; uterine displacements; portal obstruction; pelvic inflammatory disease; habitual constipation; straining at stool; prolonged standing; heavy lifting.

Treatment.—Correct the cause. When due to pregnancy, regulate the bowels, support the uterus with an abdominal binder, and the vulva with a compress and T-bandage, prescribe hot or cold lead and opium wash for the relief of itching, and enjoin frequent recumbency. Unguentum gallæ may be of service. Rupture should be guarded against, because of the danger of serious hemorrhage. The condition usually disappears after parturition. (For drugs, see Part 11.)

Accidental hemorrhage should be controlled by means of firm gauze compresses or deep catgut sutures.

In non-pregnant cases, if necessary, the veins may be excised between catgut ligatures.

Venereal Warts.—L. *vene'reus*, pertaining Venus. (See Verrucæ, below.)

Verrucæ; Warts.—L. *verrúca*, wart. **Classification.**—1. Ordinary wart or simple papilloma, verruca vulgaris.

2. Verruca acuminata—pointed condyloma—venereal wart—moist wart—fig wart—cauliflower excrescences—vegetations: skin colored, pink, or purplish red, finger-like vegetations, resembling cauliflower, cockscomb, bunch of grapes, or mulberries.

Causes.—Uncleanliness, irritating discharges, congestion and leucorrhœa of pregnancy, gonorrhœa, syphilis, etc.

3. Flat condyloma or moist papule of secondary syphilis—modified mucous patch: "soft, grayish, with a broad base."

Treatment.—1. Verruca Vulgaris.—Pick up the wart with toothed forceps, and cut off below the base with curved scissors, or, better, a sharp knife. Suture the skin with catgut, or cauterize with pure carbolic acid or silver nitrate.

2. Verruca Acuminata.—Pick up the growths with toothed forceps, and excise with curved scissors or the knife. Cauterize the base with silver nitrate, nitric acid, or the thermocautery at a dull red heat, or close the wound with interrupted catgut sutures. Enjoin local cleanliness. Prescribe vulvar and vaginal douches with hot boric acid solution, ℥i to the pint, and hot sitz-baths. Always remove the growths before the onset of labor, in order to avoid puerperal sepsis and ophthalmia neonatorum.

If excision is not feasible, have the patient cleanse the parts daily with soap and water, followed by a solution of pot. permanganate, 1 : 2000, or bichloride, 1 : 2000, or salicylic acid, 5 to 10 per cent. in equal parts of alcohol and water; then dry and apply an astringent antiseptic dusting powder of calomel and salicylic acid, aa; or zinc oxide and bismuth subnitrate, aa; or tannic acid and lycopodium, aa; or alum, gr. v–l to the ounce of boric acid; or resorcin, 8 parts, bismuth subnitrate and boric acid, aa one part (Bœck). If this plan fails, curette the growths, and apply cautiously glacial acetic acid, chromic acid, nitric acid, or lactic acid, the surrounding skin being protected with vaseline. Or, freeze the growths once or twice with a stream of ethyl chloride, protecting the surrounding skin with dry cotton. "The most valuable local application," says Keyes, is a 10 per cent. mixture of salicylic acid in acetic acid (not glacial). "It forms a chalk-and-water mixture of which the moist chalk is smeared over the warts." "One or two applications cause the growths to wither away and drop off."

3. Condyloma Syphilitica.—Employ local antisepsis and specific internal medication (see Syphilis, in Part 1.)

Vesical Atony.—L. *vesi'ca*, bladder; Gr. *a* priv. + *τόνος* tone. See Paralysis and Paresis of the Bladder.

Vesical Calculus and Foreign Bodies.—L. *vesi'ca*, bladder; *cal'culus*, pebble. **Symptomatology.**—Frequency of micturition, occurring during the day and increased by motion; pain, often increased at the end of micturition, and aggravated by motion; possibly

reflex pains in various parts; vesical tenesmus or straining; sometimes sudden stoppage of the urine; hæmaturia, usually at the close of micturition.

Examine the bladder with the sound, the cystoscope, and by bimanual palpation. The X-ray (*q.v.*) may also be used. Sterilize the bladder after each examination.

Etiology.—Stone from the kidney (see Nephrolithiasis); foreign body; sutures introduced through the mucous membrane, instead of only up to the mucous membrane; cystocele; retention of urine (*q.v.*); alkaline cystitis; vesical tumors.

Treatment.—(chiefly from Ashton). 1. Vaginal Cystotomy.—May be done under local anæsthesia. It is contraindicated before puberty. If cystitis is present, unite the vesical and vaginal mucosæ with interrupted catgut sutures, and close the fistula when the inflammation is cured.

2. Suprapubic Cystotomy.—Indicated before puberty and in older women when the stone is too large to remove per vaginam. Distend the child's bladder with air or fluid before making the suprapubic incision.

3. Litholapaxy.—Crushing of the stone by means of a lithotrite under general anæsthesia, after forcible dilatation of the urethra (see Stricture), and washing away the fragments. The operation should be preceded and followed by the administration of urotropin and bladder irrigations. It is contraindicated if the stone is hard or encysted, or over 1½ to 2 inches in diameter, if the bladder capacity is less than four ounces, if cystitis or tumor is present, and before puberty.

4. Extraction per Urethram.—Contraindicated if the stone is over one-half inch in diameter, or is rough or sharp, if cystitis or tumor is present, and before puberty.

Foreign bodies may be removed through the cystoscope by means of alligator forceps or hooks, or a suprapubic or vaginal cystotomy may be required. Wax or glass bodies require cystotomy for their removal; although Keyes mentions the successful use by several Germans of repeated benzine injections for the purpose of dissolving wax or tallow, the solution being washed out at the end of half an hour. The benzine is said to be non-irritating.

Vesical Carcinoma.—See Tumors of the Bladder.

Contraction.—See Bladder, Contraction of the.

Exostrophy.—See Bladder, Exostrophy of the.

Fistulæ.—Consult gynæcological textbooks.

Vesical Foreign Bodies.—See Vesical Calculus and Foreign Bodies.

Hemorrhoids.—Gr. *αἷμα* blood + *ῥοία* flow. See Hæmaturia.

Hyperæmia.—Gr. *ὑπέρ* over + *αἷμα* blood. See Bladder Irritability.

Inflammation.—See Cystitis.

Injuries.—See Bladder Injuries.

Irritability.—See Bladder Irritability.

Neuralgia or Neurosis.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See Bladder Irritability.

Papilloma.—L. *papil'la* + Gr. *-ωμα* tumor. See Tumors of the Bladder.

Paralysis and Paresis.—See Paralysis and Paresis of the Bladder.

Rupture.—See Bladder Injuries.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Bladder.

Spasm.—Gr. *σπασμός*. See Bladder Irritability.

Stone.—See Vesical Calculus.

Traumatism.—Gr. *τραῦμα* wound. See Bladder Injuries.

Tuberculosis.—L. *tuber'culum*, nodule. See Cystitis.

Tumors.—See Tumors of the Bladder.

Ulcer.—L. *ul'cus*. See Cystitis.

Vesico-Urethral Fissure.—L. *vesi'ca*, bladder; Gr. *οὐρήθρα* urethra; L. *fissúra*, cleft.

Symptomatology.—Constant desire to urinate; constant burning; pain on pressure over the neck of the bladder; pain during and at the end of micturition; vesical tenesmus or straining.

The diagnosis is made by means of the urethroscope.

Etiology.—Gonorrhœal urethritis; bladder displacements; traumatism due to labor, or instrumentation, or the passage of a stone.

Treatment.—Prescribe a perfectly bland diet, preferably milk (see under Gonorrhoea), and copious water drinking, two to three quarts daily for several days. For painful urination, where the urine is acid, prescribe the following:

℞ Potassii acetatis vel citratis..... ʒi (gr. xx per dose)
Tincturæ hyoscyami..... ʒi (mxx per dose)
Aquæ, q.s. ad..... ʒiv
M. Sig.—Teaspoonful, well diluted, three or four times a day.

If the urine is alkaline, prescribe sod. or ammon. benzoate, boric acid, acid sodium phosphate, or salol (see Part 11).

Under general anæsthesia, dilate the urethra forcibly and gradually up to half an inch with Hegar's uterine dilators; keep the patient in bed one week, and give diluent drinks.

Should the above treatment fail, make an artificial vesico-vaginal fistula, after first dilating the urethra a second time, and irrigate the bladder daily through the fistula with boric acid solution, gr. xv to the ounce. Use no sutures; the fistula "usually closes spontaneously by the time the fissure is healed." (After Ashton.)

Vesico-Vaginal Fistulæ.—Consult gynæcological textbooks.

Vicarious and Supplementary Menstruation.—See Menstruation, Vicarious and Supplementary.

Visceroptosis.—L. *vis'cus*, viscus + Gr. πτῶσις fall. See Splanchnoptosis in Part 1.

Vulva, Angioma of the.—L. *vul'va;* Gr. ἀγγεῖον vessel + -ωμα tumor. See Tumors of the Vulva.

Atresia of the.—See Atresia of the Vagina.

Atrophy of the.—Gr. α neg. + τροφή nutrition. See Kraurosis Vulvæ.

Cancer of the.—L. *can'cer*, crab. See Tumors of the Vulva.

Cysts of the.—Gr. κύστις cyst. See Tumors of the Vulva.

Elephantiasis of the.—See Elephantiasis, in Part 5, Skin Diseases.

Enchondroma of the.—Gr. ἐν in + χόνδρος cartilage + -ωμα tumor. See Tumors of the Vulva.

Epithelioma of the.—Gr. ἐπί on + θηλή nipple + -ωμα tumor. See Tumors of the Vulva.

Fibroma of the.—L. *fi'bra*, fibre + Gr. -ωμα tumor. See Tumors of the Vulva.

Gangrene of the.—See Gangrene of the Vulva.

Garrulity of the.—See Garrulity of the Vulva.

Hæmatoma of the.—See Hæmatoma Vulvæ.

Herpes of the.—See Herpes Progenitalis.

Hypertrophy of the.—Gr. ὑπέρ over + τροφή nutrition. See Elephantiasis, (in Part 5, Skin Diseases).

Inflammation of the.—L. *inflamma're*, to set on fire. See Vulvitis.

Itching of the.—See Pruritus Vulvæ.

Kraurosis of the.—See Kraurosis Vulvæ.

Lipoma of the.—Gr. λίπος fat + -ωμα tumor. See Tumors of the Vulva.

Lupus of the.—L. *lup'us*, wolf. See Tuberculosis of the Genital Organs.

Myoma of the.—Gr. μῦς muscle + -ωμα tumor. See Tumors of the Vulva.

Myxoma of the.—Gr. μύξος mucus + -ωμα tumor. See Tumors of the Vulva.

Neuroma of the.—Gr. νεῦρον nerve + -ωμα tumor. See Tumors of the Vulva.

Œdema of the.—See Œdema of the Vulva.

Vulva, Osteoma of the.—Gr. ὀστέον bone + -ωμα tumor. See Tumors of the Vulva.

Pruritus of the.—See Pruritus Vulvæ.

Sarcoma of the.—Gr. σάρξ, σαρκός flesh + -ωμα tumor. See Tumors of the Vulva.

Trichiasis of the.—Gr. τριχίασις ingrowing hairs. See under Pruritus Vulvæ.

Tuberculosis of the.—See Tuberculosis of the Genital Organs.

Tumors of the.—See Tumors of the Vulva.

Ulcers of the.—L. *ul'cus*, ulcer. See Vulvitis.

Varicose Veins of the.—See Varix Vulvæ.

Vulvitis.—L. *vul'va*, + Gr. -ιτις inflammation. **Etiology.**—Gonorrhœa (*q.v.*); lupus (*q.v.*); herpes progenitalis (*q.v.*); epithelioma (*q.v.*); diphtheria (*q.v.*, in Part 1); acute infectious diseases (scarlet fever, measles, smallpox); noma (*q.v.*); erysipelas (*q.v.*, in Part 5); tuberculosis (*q.v*); syphilis (*q.v.*); chancroid (*q.v.*); fungi (mycosis; aphthous vulvitis: characterized by yellow or white spots which show mycelium and spores under the microscope, after treating with a drop of liq. potassæ); pediculosis pubis (*q.v.*); oxyurias (*q.v.*, in Part 1); uncleanliness; irritating discharges from the urethra, bladder, ureters, kidneys, vagina, cervix, uterus, tubes, and rectum; fecal and urinary fistulæ; diabetic urine; masturbation; excessive coitus; traumatism; constitutional diseases (debility, anæmia, constipation, diabetes, gout, rheumatism, tuberculosis); obesity, causing intertrigo; folliculitis (inflammation of a sebaceous, hair or sweat follicle); senile changes (see senile vaginitis). Ulcer of the vulva may be due to simple inflammation, tuberculosis, epithelioma, chancre, chancroid, or herpes progenitalis.

Treatment.—Treat the cause.

1. Acute Inflammation.—Enjoin rest in bed, on a light, bland diet, and open the bowels. Instruct the patient to keep the parts cleansed with castile soap or glycerine soap and warm water, and to douche or lave the vulva three or four times daily with boric acid solution, ʒi to the pint; or aluminum acetate gr. xv to the pint; or bicarbonate and biborate of sodium, aaʒi to the pint; or bichloride of mercury, 1 : 10,000 to 1 : 5000. She may use for the purpose cotton balls held in dressing forceps and soaked in the solution. The folds of the vulva should be kept apart with moist gauze. To relieve burning, itching, and throbbing, employ the hot sitz-bath for fifteen minutes twice daily, or the constant application of lead and opium wash (Part 11). The

local application of the ice-bag may also be useful for this purpose.

In suppurative Bartholinitis, lay open the gland by means of an incision in the labium at the junction of skin and mucous membrane, and drain the abscess cavity with gauze. Lay open infected urethral or Skene's glands through the vagina, after inserting a probe (about half an inch), and cauterize with pure carbolic acid, or zinc chloride, 2 per cent., or the silver stick, or the actual cautery.

2. Chronic Inflammation.—Have the patient douche the parts with bichloride solution, 1 : 3000, or carbolic acid, 3 per cent., or an astringent such as copper or zinc sulphate, ʒss to the pint; or paint on argyrol, 25 per cent., or silver nitrate, 10 per cent., or formaldehyde, 1 per cent., or bichloride, 1 : 1000; and keep the apposed surfaces of the vulva separated with gauze and dusted with powder, *e.g.*, tannic acid and bismuth subnitrate, equal parts; or salicylic acid, gr. xx, and zinc oxide and powdered starch, aaʒss; or menthol, gr. xv, salicylic acid, ʒi, zinc oxide, ʒii, and starch and talcum, ʒv; or calomel and subnitrate of bismuth, equal parts; or boric acid and subnitrate of bismuth or zinc oxide, equal parts; or camphor, gr. iii, and boric acid, ʒi; or alum, ʒi, and boric acid, ʒiv, or equal parts of each; or powdered burnt alum and acetanelid, equal parts. For itching, add carbolic acid, 2 to 5 per cent., to the powder. For profuse secretion, add alum, lead acetate, or tannic acid, 25 per cent. Ulcers should be touched with silver nitrate, 10 to 20 per cent.; and zinc oxide ointment may be applied. Intractable ulcers should be excised and the resulting wound closed by suture.

In mild infection of the suburethral or vulval glands, one may dilate the duct of the gland with a fine probe, evacuate the gland by gentle pressure, and then inject, through a blunt hypodermic needle, a solution of silver nitrate, 5 per cent., or of argyrol, 25 per cent. (Anna M. Fullerton). This may be repeated several times a day.

Chronically inflamed glands may be excised under local cocaine or novocaine anæsthesia (see Part 11), and the wound either packed or closed with interrupted silk-worm-gut sutures, leaving several strands of the silk-worm-gut in the wound for forty-eight hours or longer, as a drain.

In furunculosis or folliculitis, cleanse the parts daily, puncture and drain abscesses and swab the resulting cavity with silver nitrate, gr. xxx ad ʒi, carbolic acid, or alcohol; destroy chronically affected follicles with the fine galvano-cautery needle or a red-hot probe; and apply to the affected surface ung. hydrargyri biniodidi, gr. viii ad ʒi; or ichthyol, ʒi, carbolic acid, ♏x, glycerine, ʒi, and petrolatum, q.s., ad ʒi. The ointment must be continued for two weeks after the last boil has disappeared (Dudley). "The X-rays," says Dudley, "are most efficacious." (See Röntgenology, in Part 1). General tonics are indicated. Yeast internally is recommended.

For thrush, cleanse the parts twice a day, and dust on a powder consisting of salicylic acid, gr. ii, powdered camphor, gr. iv, boric acid, ʒvi, and powdered starch, ʒii; or apply a saturated solution of pot. chlorate. (Kelly.)

In granular vulvitis, paint the granulated part with silver nitrate, 5 per cent., and pack the vagina daily with gauze; or apply frequently, upon a compress secured by a T-bandage, ichthyol in glycerine, 10 to 20 per cent. (Dudley.)

In vulvitis due to urinary irritation, cleanse the vulva after each urination, and apply carbolic ointment, 2 to 5 per cent., or boric ointment, 10 per cent., and powders. If the urine is over-acid, prescribe sod. bicarbonate, and potassium salts. If it is alkaline, prescribe sodium or ammonium benzoate, salol, boric acid, or acid sodium phosphate (see Part 11).

Vulvo-Vaginal Glands.—See Bartholin's Gland.

Warts.—See Verrucæ.

Whites.—See Leucorrhœa.

Womb, Falling of the.—See Prolapsus Uteri.

The Gynæcological Armamentarium.—1. Office Equipment.—Examining table; X-ray machine; electrical outfit: galvanic, faradic, sinusoidal, and high-frequency currents, electric light furnished by street current or storage battery, galvano-cautery or Paquelin cautery; satchel; scales.

Instrument case with drawers, containing head mirror; pelvimeter; powder-puff box for dusting the vagina and vulva; suction bulb for evacuating the cervical canal; aluminum corrugated applicators; oakum; Kelly pad; Robb's leg-holder; sterile gauze compresses; sterile gauze bandage; sterile absorbent cotton; lamb's-wool; wood-wool; sterile vulval pads; lint; hæmostatic forceps; douche pan; glass bowl for holding sterile gauze while packing the vagina or uterus; Davidson syringe; T-bandages; safety razor; safety pins; vaginal specula, large and small, Sims's, Simon's, Ferguson (three sizes), tubular, bivalve, trivalve, weighted; long dressing forceps; tenaculum forceps; Kelly's

two-pronged gauze-packer; knives; scissors, blunt and pointed, straight and curved; thumb forceps; long rat-toothed dissecting forceps; White's spiral spring repositor for inversion of the uterus; Sims's glass vaginal plug; artificial leech; medicine-droppers; minim graduate; probe; small ulcer curette; Braun colpeurynter; pessaries, various sizes, hard-rubber ring and lever pessaries: Albert Smith, Hodge, Gehrung, Skene, Munde-Thomas-Smith, Thomas retroflexion pessary with bulbous upper extremity, cup or ring with external support, Schultze's sleigh pessary, soft-rubber ring pessary, thick-ring pessaries, disc pessaries, shell pessaries, bayonet handle pessaries; stethoscope; blood-pressure apparatus; hair epilator; uterine sound; urinary and rectal instruments.

2. Laboratory Equipment. — Microscope; slides; cover-glasses; stains; Gram's stain chemicals: saturated aniline water, filtered; saturated alcoholic solution of gentian violet; iodine; pot. iodide; alcohol 95 per cent.; safranin; drug scales; spatulas; waxed papers; plain white papers; mortar and pestle; alcohol lamp or Bunsen burner; glass funnel; filter paper; spectroscope.

Urinalysis Outfit.—I. Utensils.—Litre-volumetric flask; litmus paper, red and blue; urinometer and cylinder for the estimation of specific gravity; filter paper; glass funnels and stand; alcohol lamp or Bunsen burner; test-tubes and rack; glass tube with drawn out tip; Esbach's albuminometer; Purdy's electrical centrifuge with Purdy's graduated test-tubes; microscope, slides, and cover-glasses; water still; two graduated burettes of 50 c.c. capacity; water bath; Einhorn's saccharimeter; Doremus ureometer; catheters; accurately graduated hypodermic syringe; the Duboscq or the Rowntree and Geraghty modification of the Autenrieth-Königsberger colorimeter; cystoscope and ureteral catheters.

II. Chemicals.—Powdered charcoal, mag. oxide or carbonate, barium carbonate, silicic acid, sawdust, or lime water, for clarifying urine; acetic acid solution, 5 per cent.; 10 per cent. solution of pot. ferrocyanide; nitric acid, c.p.; ether; solid sulpho-salicylic acid; phospho-tungstic acid; hydro-chloric acid, c.p.; alcohol, 95 per cent; acetic acid, 50 per cent.; copper sulphate crystals, c.p.; distilled water; Rochelle salt; sod. hydrate; sod. or pot. citrate; crystallized sod. carbonate; 10 per cent. solution of caustic soda; bismuth subnitrate; lead acetate; phenylhydrazin hydrochloride; sod. acetate; 60 per cent. alcohol; liquor ferri chloridi; para-amido-aceto-phenon; sodium nitrite; concentrated ammonia water; chloroform; pot. or sod. nitroprusside; glacial acetic acid; solid caustic potash; 10 per cent. solution of salicyl aldehyde in absolute alcohol; acetic acid; hydrogen peroxide; 1 per cent. alcoholic solution of phenolphthalein; decinormal sod. hydroxide solution; formalin; bromine; 20 per cent. sodium hydrate solution; 5 per cent. solution of silver nitrate;

Schema for the Gynæcological History and Examination

Name *Address* *Date* *No.*
Single, married (how long) *Widow* (how long) *Occupation*
No. and ages of children *Age* *Race*
Miscarriages *General appearance*
Labors *Height* *Weight*
Puerperia *Appropriate or proper weight* (see Part 1)
Leucorrhœa: urethral, vulval, vaginal, cervical, or uterine. *Hygiene:* Rest Exercise
Recreation Diet Sleep
Bowels Ventilation Baths
Sexual habits Tea and Coffee Narcotics
Alcohol Tobacco

Menstruation—intervals duration
amount pain
Complaint,
To what does the patient attribute her illness:
History of present illness:
Previous history:
Family and Husband's history:
Examination.
Vulva Vaginal outlet Vagina
Cervix Uterus Tubes and ovaries
Bladder Rectum Abdomen
Heart, blood vessels, lungs, and other organs and tissues
Urinary analysis (see Part 1). Amount in 24 hours Frequency
Color Reaction s.g. Total solids
Urea Albumen Sugar Sediment
Renal function
Diagnosis:
Treatment (including dates; and whether at office or home).

phenolsulphonephthalein (0.6 gm.); sod. hydroxide, 8 per cent.; sod. chloride, 0.75 per cent; 25 per cent. sod. hydrate solution; phloridzin; indigo carmine.

3. Operating Room Equipment.—Operating table; stands; irrigation reservoir with tubes and stand; basins; pitchers; hand brushes; soap; Rochester sterilizer for dressings; instrument sterilizer (fish kettle); douche pan; Kelly pad; operating gowns; caps; nose and mouth protectors; laparotomy sheets, plain sheets, rubber sheets; towels; laparotomy pads with tape attached; rubber gloves; safety pins; Martin india-rubber bandage; leggings; Robb's leg-holder; adhesive plaster, 2 to 3 inches wide; plain gauze; iodoform gauze; absorbent cotton; lint; gauze bandage; lamb's-wool; wood-wool; vulval pads; suture material: silk, silkworm-gut, plain catgut, chromicized catgut, linen thread; glass bowl for holding sterile gauze while packing the vagina or uterus; actual cautery; Davidson syringe; T-bandages; razor; Esmarch inhaler; tongue forceps.

Instrument cases containing the following:

A. Genital Instruments. — Scalpels; hæmostatic forceps, straight and curved; scissors, blunt and pointed, straight and curved; Emmet's slightly curved and fully curved scissors (curved to the left for use in the right hand); thumb forceps; long rat-toothed dissecting forceps; needle-holder; needles, assorted varieties and sizes; Hank's coniform and olive-shaped cervical dilators; Garrigue's olive-shaped cervical dilators; Gœlet's expanding dilator; Hegar's dilators; Cleveland's dilator; light and heavy steel uterine dilators; Wylie drain; Braun intra-uterine syringe; corrugated aluminum applicator; Sims's sharp curette; Martin's fundus curette; vaginal specula, large and small: Sim's, Simon's, Ferguson's (three sizes), tubular, bivalve, trivalve, weighted; long dressing forceps; tenaculum forceps, single and double; uterine sound; Kelly's two-pronged gauze packer; pedicle needle; tissue clamps, straight and curved; Fritsch-Boseman uterine two-way catheter; abdominal retractors; self-retaining abdominal retractors; placenta forceps; Péan's hysterectomy forceps; curved hysterectomy clamps; right-angled hysterectomy clamps; Kelly-Cullen enucleator; heavy hysterectomy traction forceps: sharp serrated spoon curette or loop curette; obstetrical forceps; long nozzle drainage syringe; glass and rubber drainage tubes; Moynihan's intestinal clamps; Murphy's buttons; two-branched and four-branched metranoikter; atmocausis apparatus; large glass trocars and tubing for tapping cysts; small metal trocars; infusion apparatus; White's spiral spring repositor for inversion of the uterus; Braun colpeurynter.

B. Urinary Instruments.—Skene's bivalve urethral speculum; Kelly's urethral endoscopes; Skene's reflux ureteral catheter; glass urethral syringe of one dram capacity; Franck urethral syringe; ureteral catheterizing cystoscope; ureteral catheters and graduated bougies; lithotrite; bladder alligator forceps; bulb ear syringe; piston syringe; bougies à boule; Otis' straight dilating urethrotome; bladder snare; No. 5 French renal catheter; aspirating needles; glass funnel and rubber tubing; self-retaining catheter; glass or metal and soft rubber urethral catheters; Hegar dilators; Dickinson two-way catheter; cone urethral dilator; medicine droppers; Earle's or Collins's urinal for exostrophy of the bladder.

C. Rectal Instruments.—Proctoscopes; sigmoidoscopes; long rectal alligator forceps; Kelly's conical sphincter dilator; graduated rectal bougies; rectal tube and funnel.

4. Internal Drugs Mentioned in the Text.—A. Alteratives and Antiluetics (L. *altera're* to change; *an'ti-*, against + *lu'es*, syphilis).—Salvarsan; neosalvarsan; liq. arsenii chloridi; arsenious acid; sod. arsenate; liq. potassii arsenitis; Garnier and Lamoureux's granules of green protiodide, gr. $\frac{1}{4}$; biniodide of mercury; protiodide of mercury; bichloride of mercury, gr. $\frac{1}{100}$; gray powder; tannate of mercury; blue pill; blue ointment, 50 per cent.; mercury-vasogen; salicylate of mercury; potassium iodide; calcium sulphide; fibrolysin; creosote; hypophosphites; glycerophosphates; codliver oil; maltine; comp. syrup sarsaparilla.

B. Emmenagogues (Gr. ἔμμηνα menses + ἄγειν to lead).—Oxalic acid; ammoniated tincture of guaiacum; manganese binoxide; chloride of gold and sodium; ovarian extract; corpus luteum extract; thyroid extract; pituitary extract; apiol; pot. permanganate; salicylic acid; fl. ext. hoang-nan; aloes; iron; tinct. cantharidis; asafœtida; ol. sabinæ; fl. ext. cimicifuga; oil of rue; oil of tansy; ol. hedeoma; santonin; tr. pulsatilla; ol. cinnamomi; quinine; tr. cinnamomi; gossypii cortex (cotton root bark); ol. origanum; sod. salicylate.

C. Hæmostatics (Gr. αἷμα blood + στατικός standing). — Pituitrin; ergotin; ergotol; fl. ext. ergot; fl. ext. hamamelis; gallic acid; tannic acid; cal. chloride; stypticin; styptol; stagnin; dilute or aromatic sulphuric acid; gelatine (Merck's sterile); hydrastinin hydrochloride; fl. ext. hydrastis; strophanthus; digitalis pulv.; fl. ext. senecio aureus.

D. Neuromuscular Sedatives (L. *se'do*, I allay).—Ether; chloroform; powd. opium; suppos. of ext. opii, gr. i–ii, and ext. bellad., gr. ⅙ to ¼; camph. tr. opii; Dover's powder; morphine; dionin; codeine; tr. and ext. belladonnæ; atropine; sod. or pot. bromide; valerian; tr. and fl. ext. gelsemii; sumbul; chloral hydrate; trional; phenacetin; aspirin; whiskey; brandy; asafœtida; tr. and ext. hyoscyamus; tr. cannabis indica; stramonium; triphenin; pyramidon; tr. veratri; tr. aconite; aq. laurocerasi; antipyrine.

E. Hæmatics (Gr. *αἷμα* blood).—Reduced iron; peptomanganate of iron; irontropon; ferrum exsiccatum; elix. ferri, quin. et strych. phosphati; syr. ferri iodidi; iron and quinine citrate; tr. ferri chloridi; arsenhemol; ferrum sulphatum exsiccatum; ferromannin.

F. Acids (L. *a'cidus*, sharp).—Dilute hydrochloric, nitric, nitromuriatic, and acetic acids.

G. Antacids (Gr. *ἀντί* against).—Milk of magnesium; liq. calcis; sod. bicarb.; magnesia; Vichy; Apollinaris; borocitrate of magnesium; liq. potassæ; ammon. carbonate.

H. Purgatives (L. *purga're*, to cleanse).—Castor oil; calomel; cascara ext.; senna; pulv. rhubarb; aloes purif.; aloin; tr. aloes; liq. mag. citratis; Carlsbad salts; sod. phosphate; Glauber's salt; Epsom salt; Rochelle salt; Hunyadi; Friedrichshall.

I. Stomachics.—Syrup of ginger; tr. zingiberis; ext. calumbæ; tr. cinchonæ; tr. cinchonæ comp.; tr. gentianæ; tr. gent. comp.; tr. and ext. nucis vomicæ; strychnine.

J. Urinary Sedatives and Astringents.—Inf. and fl. ext. pareira brava; inf. and fl. ext. triticum repens; fl. ext. uva ursi; fl. ext. saw palmetto; fl. ext. zea mays; inf. melon seed; grated nutmeg; copaiba; cubebs; sandalwood.

K. Urinary Antiseptics.—Helmitol; cystogen; salol; urotropin; saliformin; methylene blue; ol. eucalypti.

L. Urinary Acidifiers.—Acid sodium phosphate; benzoic acid; sod., lithium, and ammon. benzoate; camphoric acid.

M. Diuretics (Gr. *διούρησις* urination).—Liq. potassii citratis; pot. citrate; pot. bicarb.; pot. acetate; sweet spirits nitre; inf. and fl. ext. buchu; inf. and ol. juniper.

N. Carminatives (L. *car'men*, charm; *carmi'no*, I soothe).—Spts. chloroform; aqua menth. pip.; ol. menth. pip.; tr. card. comp.; ol. sassafras; spts. ætheris comp.; aq. cinnamomi.

O. Vasodilators.—Amyl nitrite; spt. glonoini; tabellæ trinitrini, gr. $\frac{1}{100}$.

P. Anæsthetics (Gr. *ἀν* without + *αἰσθήσις* perception).—Ether; chloroform.

Q. Vaccines, Sera, and Constitutional Antiseptics.—Tuberculin; antistreptococcus serum; nuclein; collargol; ung. Credé.

R. Menstrua and Flavors.—Syr. acaciæ; syr. orange peel; syr. simple; elixir simple; sacchar. alb.

S. Miscellaneous.—Pot. chlorate, piperazin; sod. chloride; coumarin; distilled water.

5. Local Preparations Mentioned in the Text.—A. Antiseptics (Gr. *ἀντί* against + *σήψις* putrefaction).—Squibb's surgical powder (containing alum); salicylic acid; pyrogallol; pyroligneous acid; iodine crystals; menthol; sod. bicarbonate; sod. biborate; sod. chloride; europhen; resorcin; iodoform; aristol; thymol; pyoktannin; methylene violet; boric acid; alum. acetate; merc. bichloride; calomel; ichthyol-glycerine; boroglyceride; ichthyol; yellow oxide of mercury oint., 1 per cent.; iodoform oint.; ung. hydrarg. ammon.; ung. ac. carb.; balsam of Peru; ung. hydrarg. nitratis; ung. hydrarg.; ung. iodi; zinc oint.; ung. ac. borici; pot. permanganate; protargol; comp. sol. of iodine; alcohol; formalin; tr. iodi; creolin; lysol; liq. sod. chlorinatæ; hyd. perox.; acetone; formaldehyde; argyrol; comp. sol. of cresol (U. S. P.); bismuth subgallate; bismuth subnitrate; dilute acetic acid; ung. hydrarg, biniodidi, 1 : 60; oleate of mercury.

B. Styptics and Astringents (Gr. *στύφειν* to contract; L. *ad*, to + *strin'gere*, to bind).—Adrenalin; suprarenal ext.; gelatine; Monsell's solution; powdered burnt alum; tannic acid; neutral lead acetate; alum. acetate; liq. plumbi subacetatis; liq. calcis; comp. tr. benzoin.

C. Caustics (Gr. *καίειν* to burn).—Caustic potash; zinc acetate, chloride, and sulphate; acetic acid (not glacial); lactic acid; nitric acid; carbolic acid; salicylic acid; silver nitrate; copper sulphate.

D. Local Analgesics or Anodynes (Gr. *ἀν* without; *ἄλγος* pain; *ὀδύνη* pain).—Cocaine; novocaine; alypin; ethyl chloride; ol. gaultheriæ; camphor; lead water and laudanum; ung. bellad.; ung. veratri.

E. Emollients and Protectives (L. *emol'lio*, I soften).—Petrolatum molle; lanolin; benzoated lard; olive or cottonseed oil; petroleum jelly; ol. theobromæ; ol. cacao; glycerine; ung. aquæ rosæ; refined petroleum oil; starch; talcum; calamine; lycopodium; prepared chalk; charcoal; albolene; oleic acid.

F. Counter Irritants.—Mustard; turpentine; flaxseed.

G. Miscellaneous.—Indigo-carmine; radium; Nauheim bath salts; soap; castile, glycerine, and green; coumarin; distilled water; sodium chloride.

PART 3

GENITO-URINARY DISEASES

Abscess, Cowper's Gland.—L. *abscessus*, a going apart; *glans*, a cord. See Cowperitis.

Kidney.—See Pyelonephritis in Part 1.

Perinephric.—See Perinephric Abscess.

Periurethral.—Gr. *περί* around + *οὐρήρθα* urethra. See under Gonorrhœa; and Stricture of the Urethra.

Prostatic.—See Prostatitis.

Adenitis, Inguinal.—See Lymphadenitis, Inguinal.

Albuminuria.—See Part 1, General Medicine and Surgery.

Alkalinuria.—See Part 1.

Aneurysm of the Renal Artery.—See Part 2, Gynæcology.

Angioma Urethræ.—Gr. *ἀγγεῖον* vessel + *-ωμα* tumor; *οὐρη'θρα*. See Tumors of the Urethra.

Angioneurosis of the Kidney.—Gr. *ἀγγεῖον* vessel + *νεῦρον* nerve. See under Hæmaturia.

Anorectal Gonorrhœa.—L. *aṅus*; *rec'tum*, straight. See under Gonorrhœa.

Anuria.—See Part 1, General Medicine and Surgery.

Arthritis, Gonorrhœal.—Gr. *ἄρθρον* joint + *-ιτις* inflammation. See under Gonorrhœa.

Atony of the Bladder.—Gr. *α* priv. + *τόνος* tone. See Paralysis and Paresis of the Bladder.

Atrophy of the Prostate.—Gr. *α* neg. + *τροφή* nourishment; *πρό* before + *ἱστάναι* to stand. Atrophy of the prostate occurs as a result of wasting diseases, senile sclerosis, long-continued compression due to the damming up of urine behind a stricture, or to adjacent tumors, atrophy or destruction of the testicles, and as a congenital affection.

Incontinence of urine gradually develops; very rarely retention. Urgency of urination is usually present, and cystitis occurs. Rectal examination reveals a small prostate, and the passage of urethral sounds encounters no resistance as in prostatic hypertrophy.

Treatment.—The passage of large metal sounds and faradization are recommended, one electrode at the bladder sphincter and the other in the rectum; but the results are not apt to be striking. Regular catheterization is demanded in cases of retention.

Azoöspermia.—Gr. *α* neg. + *ζῶον* animal + *σπέρμα* seed. See Sterility.

Balanitis.—See Balanoposthitis.

Balanoposthitis.—Gr. *βάλανος* glans + *πόσθη* prepuce + *-ιτις* inflammation. Inflammation of the mucosa of the glans penis (balanitis) and the prepuce (posthitis).

Etiology.—Uncleanliness; long prepuce; irritating female discharge; violent coitus; gonorrhœa; herpes; eczema; venereal wart; chancroid; chancre; the acute exanthemata; gouty nature; diabetes.

Treatment.—Cleanse the parts two to four times daily with a mild antiseptic solution such as boric acid, ℥i–ii to the pint; carbolic acid, ℥ss to the pint; bichloride, 1 : 10,000 to 1 : 5000; potassium permanganate, gr. iiss to the pint; aluminum acetate, gr. x to the ounce; silver nitrate, gr. iiss to the ounce; or peroxide of hydrogen and water, equal parts; then dry the parts, and apply, with a camel's-hair brush, one of the following powders, *e.g.*, tannic acid and bismuth subnitrate, equal parts; calomel and bismuth, equal parts; boric acid or zinc oxide and bismuth, equal parts; alum, ℥i and boric acid, ℥iv; calomel, aristol; dermatol; nosophen; compound stearate of zinc; etc. Tuck small strips of gauze under the prepuce for the purpose of keeping the apposed surfaces separated and for drainage. Ulcers may be painted with silver nitrate, gr. v to the ounce. If great swelling and tension are present, slit up the dorsum of the prepuce, and apply wet antiseptic dressings.

After the inflammation is cured, circumcision is advisable.

Bed-Wetting.—See Enuresis.

Bilharziasis, Vesical.—See under Cystitis.

Bladder, Atony of the.—Gr. *α* priv. + *τόνος* tone. See Paralysis and Paresis of the Bladder.

Bilharziasis of the.—See under Cystitis.

Calculus.—L. *calculus*, pebble.

Symptomatology.—Diurnal frequency of urination, increased by motion; pain, often referred to the end of the penis, often increased at the end of micturition, and aggravated by motion; possibly reflex pains in various parts; hæmaturia, usually at the close of micturition; tenesmus or straining; sometimes sudden stoppage of the urinary flow; pulling at the prepuce (a common sign in children).

Explore the bladder by means of a stone searcher, such as that of Thompson's, or a lithotrite or litholapaxy pump, with the

hips elevated and the bladder filled with boiled boric acid solution, ʒi–iv ad Oi; or employ the cystoscope X-ray, (*q.v.*) or bimanual palpation through the rectum. Irrigate the bladder after each examination.

Etiology.—Stone from the kidney (see Nephrolithiasis); retention of urine (*q.v.*); alkaline cystitis; vesical tumors; foreign bodies, including retained sutures.

Prophylaxis.—Refer to Etiology; see also Nephrolithiasis.

Treatment.—Employ litholapaxy (Gr. λί'θος stone + λάπαξις removal) by means of a Bigelow or Chismore or Thompson and Guyon lithotrite and evacuator (Gr. λίθος stone + L. *ter'ere, tri'tus*, to rub), if practicable, preferably under general anæsthesia, with the hips elevated and the bladder filled with boric acid solution. Cystitis, if present, should first be corrected (see Cystitis). Casper prefers the lithotrite of Thompson and Guyon, using first the large instrument, then the small one for small fragments.

The operation should be preceded and followed by the administration of urotropine (Part 11) and by irrigation of the bladder with silver nitrate solution, 1 : 10,000. If severe hemorrhage follows the operation, or the patient cannot empty the bladder, insert a retention catheter (see under Bladder Diverticula). Keep the patient in bed four days. Examine the bladder cystoscopically for stone fragments one month later.

If litholapaxy is impracticable, perform suprapubic or perineal lithotomy (Gr. λίθος stone + τέμνειν to cut).

Keyes gives the following indications:

"For children, whose urethra will take a 16 F. sound, litholapaxy; otherwise suprapubic lithotomy."

"For prostatics, suprapubic lithotomy and prostatectomy in one or two stages."

"For cases with grave stricture, perineal lithotomy."

"For sacculated bladders (*q.v.*) suprapubic lithotomy."

"For cases requiring good drainage, such as have severe pyelonephritis, uncontrollable ammoniacal cystitis, or prostatic abscess, perineal or suprapubic lithotomy."

"All other cases may be submitted to litholapaxy. Very large stones are, however, better cut for than crushed."

Bladder Carcinoma.—Gr. καρκίνος crab + -ωμα tumor. See Tumors of the Bladder.

Bladder, Contracted.—L. *con*, together + *tra'here*, to draw. Frequent urination is the only symptom of simple contraction. The capacity of the bladder is ascertained by measuring the amount of fluid it is capable of holding, using for the purpose a catheter attached to a fountain syringe.

Etiology.—Cystitis (causing thickening and contraction of the bladder wall); stone in the bladder; neoplasms; operations on the bladder; atrophy from disuse, where the bladder has never held much urine, as in chronic cystitis, chronic irritability of the bladder, and enuresis of childhood continuing after puberty.

Treatment.—Attend to the cause. Once every day, for five to ten minutes at a time, alternately distend and relax the bladder by means of warm sterile normal saline solution (ʒi ad Oi) introduced through a metal catheter and fountain syringe, the reservoir being alternately raised and lowered, the latter when the patient complains of distention. Continue this for several months. The prognosis under this treatment is good. (Ashton.)

Bladder, Contracture of the Neck of the.—L. *con*, together + *tra'here*, to draw. See Bladder Irritability.

Bladder Distomiasis.—Gr. δις two + στόμα mouth: fluke-worm. See under Cystitis.

Bladder Diverticula or Sacculations.—L. *diverticula're*, to turn aside; *sac'culus*, little sac or pouch. The diagnosis is made by means of the cystoscope. Congenital diverticula have a sharply defined round or oval border in contrast to the acquired diverticula. The latter are due to urinary obstruction (see Retention of Urine). Diverticula predispose to cystitis and stone.

Treatment.—Remove the cause of obstruction, if possible. Then employ systematic catheterization, or even the retained catheter, in order to prevent distention of the bladder. The eye of the retained catheter, which should be of soft rubber or silk, should be just within the bladder. If a silk catheter is used, the penis should be laid up over the groin, in order to prevent ulceration at the peno-scrotal angle. The bladder and urethra should be irrigated with warm boiled boric acid solution, ʒi–iv to the pint, before inserting the catheter. The bladder should be irrigated daily during the retention of the catheter, and the latter should be removed and cleansed and the urethra irrigated every three to six days. A tube reaches from the catheter to a urinal, containing carbolic acid, 1 : 40, which should be cleansed and boiled daily. The penis should be kept wrapped in a moist bichloride (1 : 10,000) compress.

Abdominal massage, vibratory and manual, faradic electricity, good hygiene and tonics are valuable adjuvant measures.

Should the above treatment fail, excise the sac.

Bladder, Echinococcus Disease.—Gr. ἐχῖνος hedgehog + κόκκος berry. See under Cystitis.

Bladder, Exostrophy of the.—See Part 2, Gynæcology.

Bladder Filiariasis.—See under Cystitis.

Bladder Fistula.—L. *fis'tula*, pipe. The diagnosis is aided by cystoscopy, proctoscopy, and the injection of methylene blue or indigo-carmine into the bladder, etc.

Etiology.—Congenital anomaly; surgical operations; trauma; ulceration or abscess due to vesical stone or to stercoral concretions; tuberculosis; malignant neoplasms.

Treatment.—Simple fistulæ may be made to close spontaneously by daily irrigation of the bladder, say with warm sterile boric acid solution, ʒi ad Oi; and if the fistula is a vesico-intestinal one, irrigation also of the bowel. It is essential that any urethral obstruction be first removed, either by operative means or the retained catheter (see under Bladder Diverticula, for particulars).

If this conservative treatment fails, an operation is required.

Bladder-Fluke.—See under Cystitis.

Bladder, Foreign Bodies in the.—Extract the foreign body per urethram, if possible, by means of the lithotrite or cystoscopic alligator forceps or hooks, with the assistance, if need be, of the operating cystoscope; otherwise resort to suprapubic cystotomy. Glass bodies require suprapubic cystotomy for their removal. For the removal of wax or tallow bodies, Keyes mentions the successful use, by several Germans, of the injection of benzine, the resulting solution being washed out after half an hour. The injection may be repeated, if necessary. It is said to be non-irritating.

Bladder Hemorrhage.—Gr. αἷμα blood + ῥηγνύναι to burst forth. See Hæmaturia.

Hydatid Disease.—Gr. ὑδατίς, vesicle. See under Cystitis.

Hyperæsthesia.—Gr. ὑπέρ over + αἴσθησις sensibility. See Bladder Irritability.

Inflammation.—L. *inflamma're*, to set on fire. See Cystitis.

Bladder Injuries.—Rupture of the bladder, which may be extra- or intraperitoneal, is usually characterized by pain, difficulty in walking, futile attempts to urinate, and scanty, blood-tinged urine obtained by catheterization. Shock usually occurs, but the patient may appear in good condition.

Treatment.—An exploratory operation should be performed promptly in all cases presenting even a suspicion of wound or rupture of the bladder. After suturing bladder wounds with deep Lembert and superficial peritoneal sutures, distend the bladder with a sterile fluid in order to test the efficiency of the sutures. Irrigate the contaminated parts with hot normal saline solution (0.8 to 0.9 per cent.), and insert a small drain. Employ a retained catheter for seven days. The eye of the retained catheter, which should be of soft rubber or silk, should be just within the bladder. If a silk catheter is used, the penis should be laid up over the groin, in order to prevent ulceration at the peno-scrotal angle. The bladder and urethra should be irrigated with warm boiled boric acid solution, ʒi ad Oi, before inserting the catheter. The bladder should be irrigated daily during the retention of the catheter, and the latter should be removed and cleansed and the urethra irrigated every three to six days. A tube reaches from the catheter to a urinal, containing carbolic acid, 1 : 40, which should be cleansed and boiled daily. The penis should be kept wrapped in a moist bichloride (1 : 10,000) compress. If urethral catheterization is impracticable, do a perineal section.

Bladder Irritability.—L. *irrita're*, to tease. The symptoms of vesical irritability are pain, stranguary, or slow and painful urination, a frequent desire to urinate, urgency of urination, and incontinence when the detrusor musculature is affected (cystalgia; hyperæsthesia vesicæ); frequency and difficulty of urination, sometimes pain, and retention of urine when the sphincter is affected (cystospasm; vesical spasm; spasm of the neck of the bladder; contracture of the neck of the bladder; stammering of the bladder). The cause may be a local lesion or a neurosis, reflex or central. In simple neurosis, symptoms are present only during the day. Hyperæsthesia and spasm are both common in children.

Etiology.—(a) Irritability Caused by a Local Lesion.—Cystitis or trigonitis; vesico-urethral fissure; posterior urethritis; vesical tuberculosis; vesical calculus; vesical tumors; foreign body; organic stricture.

(b) Irritability Without Local Organic Lesion.—Neurasthenia; nervous irritability; hysteria; excessive coitus or masturbation; overwork and anaemia; tabes dorsalis; dementia paralytica; myelitis; multiple lateral sclerosis; spastic spinal paralysis; tumors pressing upon the cord; spondylitis; malaria; lithæmia; excessive urinary acidity; pyuria (pyelonephritis);

crystals in the urine (see Nephrolithiasis); too high or too low specific gravity; irritating ingesta (ginger, radishes, spices, turpentine, salicylates, cantharides, quinine, etc.); cold; acute fevers; oxyuriasis; fissure in ano, hemorrhoids and other rectal diseases; tumor pressing upon the bladder; distended colon; pelvic inflammation (appendicitis, etc.); abdomino-pelvic operations; strangulated hernia; orchitis; prostatitis; enlarged prostate; chronic tonsilitis, etc. (absorption of irritating toxines).

Treatment.—Attend to the cause. Open the bowels. Prescribe a bland diet, excluding spices, condiments, salt in excess, pepper, vinegar, mustard, radishes, sauces, salads, pickles, sour foods, rhubarb, tomatoes, asparagus, ginger ale, lemons, acid fruits, carbonated beverages, alcohol, meats, cheese, greasy or fried foods, tea, and coffee. Enjoin copious water drinking for the purpose of diluting the urine. A sedative diuretic may be prescribed, *e.g.*, infusion of pareira brava infusion of buchu, fluid extract of zea mays, fluid extract of triticum repens, sweet spirits of nitre; or, if the urine is hyperacid, potassium citrate or sodium bicarbonate in large doses (see Part 11).

Sedative measures include hot sitz-baths; hot abdominal or rectal applications; a suppository of ext. opii, gr. ½, or ext. belladonnæ, gr. ¼, or ext. hyoscyami, gr. ¼; or laudanum, 10 to 20 drops in warm water, per rectum; or chloral hydrate, gr. x–xv, well diluted, per rectum, at bedtime; sodium bromide gr. xxx, well diluted, t.i.d. and at bedtime; valerian; asafœtida. Holt gives, to a child of two years, tincture of belladonna or of hyoscyamus, ♏i every two hours, together with plenty of water and alkaline diuretics.

℞ Tincturæ belladonnæ,
Liquoris potassii hydroxidi, aa ..... ʒi (aa ♏v per dose)
Potassii citratis ..... ʒii (gr. x per dose)
Aquæ anisi ..... ʒii
Aquæ cinnamomi, q.s. ad. ʒvi

M. Sig.—One tablespoonful every four hours. (*Journ. Am. Med. Assn.*)

Electricity may be of service. One electrode is placed over the bladder, and the other (a metal sound, covered, except at the tip, with hard rubber) on the perineum or in the bladder, the latter being filled with sterile water. It may be "carried to the painful strength." (Hunner.)

The passage of large dilating sounds, left in for a brief time (up to five minutes), acts very beneficially. Should dilatation fail, apply, after emptying the bladder, silver nitrate, 10 per cent., to the trigonum and the vesico-urethral juncture, about every five days.

Casper has cured cases by slitting a contracted meatus urinarius and "keeping it open by means of proper sutures."

Bladder Neck, Contracture of the.—L. *contractu'ra.* See Bladder Irritability.

Spasm of the.—Gr. σπασμός spasm. See Bladder Irritability.

Stricture of the.—See Stricture of the Neck of the Bladder.

Bladder Neuralgia.—Gr. νεῦρον nerve + ἄλγος pain. See Bladder Irritability.

Neurosis.—Gr. νεῦρον nerve. See Bladder Irritability.

Papilloma.—L. *papil'la,* nipple-shaped elevation + Gr. -ωμα tumor. See Tumors of the Bladder.

Bladder, Paralysis and Paresis of the.—See Paralysis and Paresis of the Bladder.

Bladder Parasites.—Gr. παράσιτος. See under Cystitis.

Bladder, Rupture of the.—L. *ruptu'ra* from *rum'pere,* to break. See Bladder Injuries.

Bladder Sacculations.—See Bladder Diverticula.

Sarcoma.—Gr. σάρξ, σαρκός flesh + -ωμα tumor. See Tumors of the Bladder.

Spasm.—Gr. σπασμός. See Bladder Irritability.

Stammering.—See Bladder Irritability.

Stone.—See Bladder Calculus.

Bladder, Stricture of the Neck of the.—See Stricture of the Neck of the Bladder.

Bladder Traumatism.—Gr. τραῦμα wound. See Bladder Injuries.

Tuberculosis.—L. *tuber'culum,* nodule. See under Cystitis.

Tumors.—See Tumors of the Bladder.

Bubo.—L. from Gr. βουβών groin. See Lymphadenitis, Inguinal.

Buccal Gonorrhœa.—L. *buc'ca,* cheek. See under Gonorrhœa.

Calcification of the Tunica Vaginalis.—L. *calx,* line + *fa'cere,* to make. See Tumors of the Testis.

Calcification, Urethral.—See Tumors of the Urethra.

Calculus, Renal.—L. *cal'culus,* pebble; *ren,* kidney. See Nephrolithiasis, in Part 1, General Medicine and Surgery.

Calculus, Seminal.—L. *se'men, se'minis,* seed. If the ejaculatory duct is occluded, severe spasmodic or colicky pain occurs during orgasm, and semen is retained. Pain on micturition and defecation may be present. The stone may be felt by means of a

metal sound in the bladder and the finger in the rectum.

Treatment.—For the pain, administer hot rectal douches or the hot sitz-bath, and morphine, gr. ⅛ to ¼, with atropine, gr. $\frac{1}{100}$, hypodermically.

Attempt to crush the stone through the rectum by compressing it against a sound in the bladder.

Calculus, Ureteral.—Gr. *οὐρητήρ*. See Nephrolithiasis, in Part 1.

Urethral.—See Urethral Calculi and Foreign Bodies.

Vesical.—See Bladder Calculus.

Carcinoma.—L. *can'cer*; Gr. *καρκίνος* crab + *-ωμα* tumor. See Tumors.

Catheter Fever.—Gr. *καθετήρ*; L. *fe'bris*, fever. See Urethral Chill.

Catheter, Retained.—See under Fistula, Urethral.

Cauliflower Excrescences.—L. *ex*, out + *cres'cere*, to grow. See Verrucæ.

Chafing.—See Intertrigo, in Part 5, Skin Diseases.

Chancre.—Fr. See Syphilis, in Part 1, General Medicine and Surgery.

Chancroid.—Fr. *chancre*, + Gr. *εἶδος* form. A local, contagious venereal disease, caused by the dumb-bell shaped strepto-bacillus of Ducrey, and characterized by an incubation period of from one to twelve days, followed by the appearance of one or several painful ulcers, with undermined edges, a moderately soft base, and a profuse, purulent, auto-inoculable discharge, and often involvement of the adjacent lymph-glands which tend to suppurate. The ulcers are usually multiple, and present a punched-out appearance. They are slow in healing, and the occurrence of buboes (about once in every three cases) greatly protracts the case.

Treatment.—If the disease is not over seven days old (Keyes), proceed as follows: Carefully cleanse the ulcers and surrounding parts with warm saturated boric acid solution (4 per cent.), or carbolic acid, 2 per cent., or bichloride of mercury, 1,: 2000 or copper sulphate, 1 per cent., or hydrogen peroxide and water, equal parts. Then dry carefully by means of blotting paper, and paint the ulcers well with cocaine solution, 5 to 10 per cent.—Dry carefully again, and apply thoroughly to every part of each ulcer, by means of a glass rod, or matchstick, or cotton swab on the end of a toothpick, pure carbolic acid, for the purpose of additional anæsthesia. Take care not to touch healthy tissue, which may, if desired, be protected with vaseline. Now dry again with blotting paper, and apply pure nitric acid or sulphuric acid, taking care to let no point escape. Wash again with an antiseptic, and dust with iodoform, which may be somewhat deodorized by means of coumarin or oil of sassafras (gtt. ii to each ʒiiss), or equal parts of powdered coffee. The thermo-cautery applied at a dull-red heat is also effectual; but Noble and Anspach say that it is apt to produce too much sloughing. Cleanse and powder the parts twice daily, "until the sloughs have separated and the granulations have become healthy," when the iodoform may be replaced by unguentum hydrargyri nitratis, one part, to vaseline, seven parts; or ung. zinci oxidi containing 3 per cent. carbolic acid; or balsam of Peru and castor-oil; equal parts; or acetanelid, boric acid and calomel, equal parts; or dematol; or calomel; or boric acid, etc. Touch exuberant granulations with the silver nitrate stick or solution (gr. xxx ad ʒi).

The application of argyrol crystals following cocainization is well praised.

If the ulcers are over seven days old, do not cauterize them; for, says Keyes, if cauterization then fails, which it almost invariably does, it leaves the sore larger than ever. Bathe the parts instead, for twenty minutes or longer, two to four times a day, with one of the above antiseptic solutions; then dry with a sterile cloth, and apply one of the above powders. Indolent ulcers, however, may be touched twice a week with tincture of iodine, or the silver stick, or pure carbolic acid.

Early chancroids may be aborted and cured by cauterization; but, says Keyes, "if the first cauterization fails, it is futile to repeat it."

If a complicating phimosis is present, irrigate the preputial sac frequently and slit it dorsally if it interferes with the proper treatment of the sores. Threatening gangrene, of course, demands prompt dorsal incision of the prepuce. Abscesses call for incision and drainage and elevation of the penis.

Timberlake employs the following plan of treatment: Under general anæsthesia, cleanse the parts with soap and water, followed with alcohol, dry, and paint the whole penis with three coats of tr. iodi. Wash off the shank of the penis with alcohol. With the thermocautery burn the chancroid, using a low heat, carrying the cauterization into 3 mm. of healthy tissue. Then circumcise, painting the line of incision with tr. iodi, and apply a wet bichloride (1:3000) dressing. Soak the penis every day for fifteen minutes with bichloride solution.

The patient should keep off his feet as much as possible in order to prevent bubo. Should the latter appear, put the patient to bed, and apply the ice-bag until resolution occurs, or until the inflammation becomes active, when heat should be substituted. Some recommend the application of tincture of iodine or of equal parts of ung. hydrargyri, ung. belladonnæ, ung. iodi, and ichthyol (Noble and Anspach), covered with waxed paper and compression made with an ascending spica bandage of the groin. Keyes says, however, " Do not, under any circumstances, paint the groin with iodine," because it irritates the skin and promotes auto-inoculation should the bubo break down.

If suppuration occurs, it is much preferable to excise the gland intact. If this is not practicable, it is generally advised that the abscess be incised, all diseased tissue curetted away, the cavity irrigated with corrosive sublimate, 1 : 1000, dried, cauterized with pure carbolic acid, and packed with iodoform gauze. But Keyes says, "Suppurating bubo should be drained by very small incisions, almost punctures, multiple if need be, followed by injection of a 10 per cent. iodoform-in-vaseline ointment," and the application of a hot-water bag, the injection to be "repeated every third day until the purulent discharge ceases." The aspirating needle may be used instead. Persistent induration calls for excision; but do not excise the glands of both groins. Should the bubo break down and infect the edges of the wound, employ the actual cautery, under general anæsthesia, and destroy thoroughly and deeply, without fear, all the infected tissue; then pack with gauze, or apply iodoform or wet dressings.

If the urethra is involved, as ascertained by endoscopic and bacteriologic examination, introduce, following urination, suppositories of iodoform in cocoa-butter, and cover the meatus with cotton or gauze to keep the suppository in. Cure thereby is said to be rapid.

Prescribe a nutritious diet, perhaps cod-liver oil, fresh air day and night, rest, regular hours of eating and sleeping, regulation of the bowels, and, as a tonic, elixir ferri, quininæ, et strychninæ, one teaspoonful well diluted, t.i.d.p.c.

Robbins and Seabury report excellent results from the following plan of treatment: After an examination for spirochætes is made (see under Syphilis), a " 25 per cent. solution of copper sulphate in distilled water is applied to the sore, and the short high frequency spark from a rather fine-pointed vacuum electrode is applied directly to the sore for one to three minutes, depending on the extent of the ulceration."

" Especial care is exercised in carrying the point of the electrode well down into any fissure or undermined edge, and the area of application should extend over the edge of the sore about one-sixteenth inch into the doubtfully healthy area." " The current is not turned off until every crack and crevice has been thoroughly treated and the surface of the sore is changed to a dark greenish gray." " It is then wiped dry and some antiseptic powder is lightly applied to the entire mucous surface of the preputial cavity." " If the sore is exposed, it should be covered with a thick moist dressing, say of bichloride, 1 : 10,000, which should be changed once or twice daily, and must not be allowed to stick." It must be moistened at least three or four times a day. The original cauterization may be repeated if it is evident that the chancroidal infection has not been completely destroyed.

Chill, Urethral.—See Urethral Chill.

Chordee.—Fr. *cordé*, corded. (See under Gonorrhœa.)

Chylocele.—Gr. χυλός chlye + κήλη tumor. An accumulation of milky lymph within the tunica vaginalis of the testis.

Etiology.—The tropical filaria sanguinis hominis (elephantiasis; lymph scrotum, *q.v.*), traumatic rupture of a lymphatic vessel into the tunica vaginalis.

Treatment.—Excise the sac.

Chyluria.—See Part 1, General Medicine and Surgery.

Coloptosis.—Gr. κῶλον colon + πτῶσις fall. (See Splanchnoptosis in Part 1.)

Condyloma.—Gr. κονδύλωμα wart. (See Verrucæ.)

Congenital Syphilis.—L. *con*, together + *gen'itus*, born. (See Syphilis in Part 1.)

Conjunctivitis, Gonorrhœal.—See Part 6, Eye Diseases.

Contraction of the Bladder.—See Bladder, Contracted.

Contracture of the Neck of the Bladder.—L. *con*, together + *tra'here*, to draw. See Bladder Irritability.

Cord, Spermatic, Carcinoma of the.—L. *cho'rda;* Gr. χορδή; σπέρμα seed; καρκίνος crab + -ωμα tumor. (See Tumors of the Testis, Epididymis, and Spermatic Cord.)

Hydrocele of the.—See Hydrocele.

Torsion of the.—L. *tor'sio; torquer'e*, to twist. (See Injuries of the Testicle.)

Tumors of the.—See Tumors of the Testis, Epididymis, and Spermatic Cord.

Corpora Cavernosa et Spongiosum, Fibrosis of the.—L. *fib'ra*, fibre. See Tumors of the Penis.

Sclerosis of the.—L. *cor'pus, cor'pora*, bodies, cavernous and spongy. See Tumors of the Penis.

Cowperitis.—Inflammation of Cowper's glands. The point of tenderness is situated about one inch in front of the anus and to one side of the middle line. The inflamed glands may be palpated by means of the index finger in the rectum and the thumb on the perineum. Their contents may be expressed into the urethra from which they may be obtained for microscopic examination. The normal glands are not palpable.

Etiology.—Gonorrhœa; rarely typhoid fever, measles, endocarditis, pyæmia, tuberculosis.

Treatment.—If a large abscess forms, incise it and pack with gauze, preceded or not by irrigation with bichloride solution, 1 : 1000. If the abscess is small, the whole gland may be removed.

If a fistula has formed, first cure the urethritis, then dissect out all the diseased tissue, freshen the margins of the urethral opening, and close with fine interrupted catgut sutures, not involving the mucous membrane. Then insert a soft catheter into the bladder, and keep it there until healing occurs (for particulars in regard to the retained catheter, see under Bladder Diverticula). Administer urotropine before and after the operation until healing has occurred.

For chronic cowperitis one may employ very gentle massage.

Tuberculous cowperitis is very rare. Excise the gland, if possible; otherwise curette away all diseased tissue, irrigate with bichloride solution, 1 : 5000, dry, swab with pure carbolic acid followed by alcohol, and pack with iodoform gauze.

Cryptorchidism.—Gr. κρυπτός hidden + ὄρκις testis. (See Undescended Testicle.)

Cyst.—Gr. κύστις bag. See Tumors.

Cystalgia.—Gr. κύστις cyst + ἄλγος pain. See Bladder Irritability.

Cyst, Epididymal Retention.—See Spermatocele.

Cystitis.—Gr. κύστις bladder + -ιτις inflammation. Inflammation of the bladder is manifested by frequent, painful micturition, urgency, vesical tenesmus or straining, burning pain in the bladder, pyuria, and sometimes hæmaturia. Ureteritis and pyelitis are possible sequelæ.

Cystitis should be distinguished from ureteral, renal, urethral, and prostatic infection, vesico-urethral fissure, simple irritability of the bladder, contraction of the bladder, and vesical stone or foreign body. To this end employ the urethroscope, cystoscope, ureteral catheter, and urinalysis, etc. See Pyelonephritis for important diagnostic criteria.

The Prognosis, under treatment, is good.

Etiology.—Catheterization; unclean instrumentation; traumatism; "cold"; focal infection (pyorrhœa, dental infection, etc.); masturbation; excessive coitus; constipation; hemorrhoids; retention of urine (*q.v.*, for causes); overdistention of the bladder due to polyuria (*q.v.*); calculi; foreign bodies; vesical tumors; parasites, *e.g.*, echinococcus (very rare; the characteristic hooklets may be voided in the urine, or the cyst may be seen through the cystoscope); the tropical filaria sanguinis hominis (chyluria or hæmatochyluria may result), and distoma hæmatobium (Bilharzii, occurring in Egypt and the African coast, causes frequent hemorrhage, strangury and pain); irritating ingesta (cantharides, turpentine, balsamics, salicylates, calomel, alcohol, etc.); urinary crystals (uric acid, calcium oxalate, phosphates, see Nephrolithiasis); too high or too low specific gravity; hyperacidity; alkalinity; injection of strong silver nitrate solution, etc.; bladder diverticula or sacculations (*q.v.*); operations.

Casual bacteria include the colon, typhoid, and tubercle bacilli, and the gonococcus, which produce an acid cystitis; and the staphylococci, streptococci, and proteus vulgaris, which produce an alkaline cystitis. Bacteria gain access to the bladder by way of the kidney, ureter, urethra, prostate, epididymis, vas deferens, seminal vesicles, intestine, appendix, blood, etc. Tuberculous cystitis is almost invariably secondary to tuberculosis of the kidney or testis, or possibly the prostate.

Treatment.—A. Acute Cystitis.—Avoid cystoscopy and local treatment. Put the patient to bed, and apply heat to the hypogastrium in the form of hot moist flannels, or hot-bran bags, or hot-water bags. Hot sitz-baths and hot rectal lavage for fifteen minutes two or three times a day are of service. Open the bowels with Rochelle salt (both laxative and diuretic), ʒi in dilute solution every two or three hours, and prescribe a bland, liquid or soft diet, with copious water-drinking between meals (two to three quarts daily of plain water, Vichy, or flaxseed tea). Prohibit meat, acid fruits, spices, condiments, mustard, horseradish, pepper, salt in excess, radishes, rhubarb, tomatoes, asparagus, pickles, salads, sauces, vinegar, cheese, greasy or fried foods, lemons, ginger ale, alcohol, tea, coffee. Milk is the

best food. If the patient is very septic, prescribe concentrated liquid nourishment (milk and eggs) and strychnine.

For severe pain and tenesmus, one of the following formulæ may be prescribed:

℞ Extracti hyoscyami... gr. viii (gr. ½ per dose)
Extracti cannabis indicæ..... gr. viii (gr. ½ per dose)
Sacchari albi..... gr. xlviii
M. et div. in pulv. No. 24.
Sig.—One powder every four hours. (Da Costa.)

℞ Extracti opii..... gr. ½
Extracti belladonnæ..... gr. ¼
Olei theobromatis, q.s.
M. et ft. suppos. Mitte talis No. 6.
Sig.—One every six or eight hours. (H. A. Kelly.)

Ashton and Dudley recommend, for the relief of pain and tenesmus in mild cases, rectal suppositories of ichthyol, gr. iii, once or twice daily.

If the desire to urinate is constant, one may instill 10 minims of a 5 per cent. solution of silver nitrate or 4 per cent. solution of cocaine, using an Ultzmann instillator.

Prescribe, as a urinary antiseptic, hexamethylenamine (urotropin) gr. v–vii–xv, in capsule or powder with water, every three or four hours. Urotropin liberates formaldehyde in the urine only when the latter is acid. The claim that helmitol liberates formaldehyde even if the urine is not acid has been proven incorrect (see Part II for dosage at various ages, etc.). Suspend the drug if it causes irritation, and reduce the dose.

Other less valuable urinary sedatives and antiseptics are:

Saliformin gr. v every four hours.

Salicylic acid, sodium salicylate, or salol, gr. v–x, every three hours (salol liberates carbolic and salicylic acids in the urine; it should not be pushed to the point of producing "lumbar heaviness"; these drugs are recommended in gonorrhœal cystitis, in which it is important to keep the urine acid).

℞ Sodii salicylatis..... ʒiss (gr. iii per dose)
Hexamethylenaminæ.... ʒiss (gr. iii per dose)
Tincturæ hyoscyami..... ʒiv (♏viii per dose)
Elixir simplicis, q.s. ad... ʒiv
M. Sig.—One dram in water every two hours ("a valuable combination" in gonorrhœal cystitis. (Bandler.)

℞ Extracti hyoscyami..... gr. ss
Phenylis salicylatis..... gr. v
Hexamethylenaminæ..... gr. v
Ft. tal. caps. No. 20.
Sig.—One every three hours, with water. (Bandler.)

Fluidextract of zea maïs, ½ teaspoonful, well diluted, every three or four hours ("the best drug I know to allay the irritability of the bladder.") (H. A. Kelly.)

Fluidextract of triticum repens, ½ teaspoonful, well diluted, every three or four hours.

Fluidextract of pareira brava, ʒi–ii, well diluted, three or four times a day.

Infusion of uva ursi, ʒss–i, t.i.d.

Infusion of buchu, ʒss–i, t.i.d. Buchu leaves are the best of the vegetable diuretics, according to Capser, who recommends, for their sedative and astringent properties two teaspoonfuls of a mixture of several herbs: buchu leaves, couch grass, pareira brava, cornsilk, uva ursi, alchemilla, etc., to each cup of water, to be boiled for several minutes—three or four cupfuls a day.

Oleum santali or ol. copaibæ, ♏v–x–xx, in capsule, t.i.d.p.c. Suspend the drug if gastric indigestion occurs. Ol. santali is indicated in gonococcus and staphylococcus infection. Says Le Fevre, the combination of ol santali vel copaibæ with salol or sodium benzoate is "especially efficacious."

Spiritus ætheris nitrosi, one teaspoonful well diluted, every two or three hours.

Oleum eucalypti, ♏x in water, every two hours.

Tincture of hyoscyamus, thirty drops, well diluted, every two or three hours.

For ammoniacal urine, prescribe:

Benzoic acid, gr. x, in capsule, three or four times a day.

Sodium or ammonium benzoate, gr. v-xxx, t.i.d.

Boric acid, gr. x-xv, in capsule, three to six times a day.

Acid sodium phosphate, gr. xxx, in water, four times a day.

℞ Acidi benzoici..... ʒii (gr. v per dose)
Acidi borici..... ʒiii (gr. viiss per dose)
Aquæ cinnamomi..... ʒxii
M. Sig.—Tablespoonful in water, four times daily. (Emmett.)

For strongly acid urine, prescribe, if deemed advisable:

Potassium citrate or bicarbonate, ʒi-ii, dissolved in one or two pints of flaxseed tea, and given in divided doses during the day. (Penrose.)

℞ Potassii citratis..... gr. xx
Tincturæ hyoscyami..... ♏x
Infusi uvæ ursi, q.s. ad..... ʒi
M. Sig.—One ounce every four to six hours.

Keep the patient in bed "as long as vesical pain and tenesmus continue." (Penrose.)

As soon as the acute symptoms are alleviated, irrigate the bladder two or three times

daily with warm boric acid or ichthyol solution, 2 per cent. of either (see below).

B. Subacute and Chronic Cystitis.—Treat the affection internally as described under acute cystitis. Irrigate the bladder every other day, or less often, with warm boiled boric acid solution, ℥ii–iii–iv to the pint (silver nitrate, gr. ¾, may be added, making a 1 : 10,000 solution); or boric acid, ℥ii, borax, ℥i, and sodium chloride, ℥ss, to the pint (boric acid solutions, being mild, may be used every day, if desired); or carbolic acid solution, up to 1½ per cent.; or oxycyanide of mercury, 1 : 10,000 to 1 : 1000; or bichloride of mercury, 1 : 100,000 in normal saline solution (℥i ad Oi), gradually increased to 1 : 10,000 to 1 : 5000 (alternate with boric acid irrigations; the bichloride irrigations are painful); or creolin, 1 : 1000 to 1 : 500; or lysol, 1 : 1000 to 1 : 500; or potassium permanganate, 1 : 15,000 to 1 : 6000 to 1 : 1000; or protargol, 1 : 10,000; or silver nitrate, 1 : 10,000 to 1 : 8000 to 1 : 500 ("the remedy par excellence," says Casper, "the best solution for general use being 1 : 1000"; it should be alternated with milder antiseptics; the stronger solutions should be followed by normal saline solution, ℥i ad Oi). The strength of the irrigating fluid should be tempered to the sensitiveness of the bladder. The latter should be completely filled.

Introduce the irrigating fluid by hydrostatic pressure from a fountain syringe with a blunt nozzle attachment (as in the treatment of urethritis), instructing the patient to open his mouth and bear down in order to relax the compressor urethræ muscle and allow the fluid to enter the bladder. If the sphincters do not relax so as to admit the fluid with moderate elevation of the reservoir, it is recommended by Bransford Lewis that 15 minims of a 2 per cent. solution of cocaine (*?*) or alypin be injected, "following with air pressure to advance it to the compressor urethræ muscle for a minute or two."

In obstinate cases, instillations of stronger solutions may be employed, *e.g.*, ½ to 2 ounces of warm silver nitrate solution, 1 : 1500, gradually increased, if no discomfort ensues, to 1 : 1000 to 1 : 500, to 1 : 100; or protargol, 1 dram of a 1 to 5 per cent. solution; or argyrol, 1 dram of a 25 per cent. solution; or collargol, 3 ounces of a 2 per cent. solution; or iodoform emulsion, 1 : 10 of liquid vaseline, 2 to 3 drams. The instillations may be made every day or every other day by means of a bulb or a funnel or a small glass piston syringe attached to a silver or hard-rubber catheter, No. 18 F., or by means of Ultzmann's instillator. The hips should be elevated; and the fluid should be retained as long as possible. Dudley says, "When the bladder is so painful as to resist all efforts at treatment, it may be anæsthetized with 10 to 20 c.c. of a 4 per cent. solution of antipyrine, left in about twenty minutes." Obstinate ulcers may be curetted and swabbed with silver nitrate through an operating cystoscope (general anæsthesia may be necessary); but excision through all the coats of the bladder, including the peritoneum, is probably required to cure the condition (followed by suprapubic drainage and irrigations for the ensuing cystitis).

In intractable cases or in cases of "marked retention with much pus and mucus," it may be advisable to fasten in place a soft catheter for frequent irrigations and constant drainage (see under Bladder Diverticula, for details in regard to the use of the retained catheter). Casper's self-retaining catheter or Pezzer's catheter may be used. "If the retained catheter is not well supported, it is sometimes possible to remove the difficulty by stretching the posterior urethra with a Kollman dilator, up to 38 or 40 F., under efficient local anæsthesia." (Bransford Lewis.) Morphine may be given to make the retention of the catheter more tolerable.

If retention of a catheter is not possible, resort to suprapubic or perineal cystotomy, preferably (as a rule) the former, and insert a permanent drainage tube. Treat conditions as found—excise ulcers and diverticula; open perivesical abscesses wherever they point, etc. Interstitial and pericystic inflammation, in which the bladder wall is thick and contracted, usually requires suprapubic drainage for weeks or months.

Good hygiene is, of course, important, *e.g.*, rest, only the lightest exercise, warm clothing, hot full baths with friction, fresh air day and night, regulation of the bowels, good food, at least four pints of fluid in twenty-four hours, and perhaps a tonic. Do not neglect to eradicate any possible foci of infection.

In filariasis (see Part 1), a spontaneous cure usually occurs if the patient is removed from the infected region.

In bilharziasis (see Part 1), treatment can only be directed to the checking of hemorrhage by means of irrigations with hot silver nitrate or creolin solution, 1 : 1000 to 500, and continuous catheterism for about ten days to quiet the bladder. If retention of urine occurs, a perineal section

may be required and the clots broken up with the finger and washed out. Excise urethral fistulæ freely; scrape perineal fistulæ with a sharp spoon, and pack with gauze so as to keep the wound open to granulate. It is said that spontaneous cure often occurs.

In echinococcus disease, open and obliterate the cyst.

C. Tuberculous Cystitis.—It is susceptible of cure or amelioration. An infected kidney, testis, or prostate should be removed, whereby the cystitis usually disappears. Plenty of nourishing food, fresh air, and rest are of importance. Codliver oil and hypophosphites or glycerophosphates may be prescribed. Creosote, guaicol, ichthyol, and ichthalbin have their advocates (see Part 11). Casper praises morphine and belladonna as valuable sedative and curative agents. Alkalies may be soothing. The application of heat is especially soothing.

In advanced cases (not in the early stages), the bladder may be instilled (never irrigated), once daily, or two or three times a week, through a small, soft-rubber catheter, with an emulsion of iodoform, ʒi to ʒi of liquid vaseline, two or three drams at a time, to be retained as long as possible; or one-half dram of the following: guaiacol, 5 gm., iodoform, 1 gm., sterile olive oil, 100 gm. (Collin); or guaiacol valerianate, 25 to 100 per cent. in olive oil (Chetwood); or thallin sulphate, 3 to 12 per cent. aqueous solution (Chetwood); or Gomenol oil, 15 to 30 c.c. of a 20 per cent. solution. Casper regards bichloride of mercury as the "sovereign" local remedy. He begins with instillations of 1 : 10,000 to 1 : 1000, no oftener than twice a week, less often if there is much painful reaction, and as the symptoms abate, he diminishes the strength and increases the quantity up to 50 c.c. of a 1 : 10,000 to 1 : 5000 solution. Do not inject enough to distend the bladder. Warn the patient that a painful reaction follows each instillation. Administer morphine. Discontinue the treatment "if no result is experienced after three or four applications."

Keyes, however, begins with instillations of 2 to 10 minims of a 1 : 25,000 solution of bichloride, and increases the strength of the solution "as far and as rapidly as the patient's symptoms permit." He says, "The treatment should excite no sharp reaction."

Casper "strongly opposes" operative methods of treating tuberculous cystitis, *i.e.*, curettement of ulcers through the cystoscope, excision, and suprapubic cystostomy. Internal urinary antiseptics and silver nitrate, boric acid, and potassium permanganate instillations do harm. Tuberculin is still *sub judice*.

Cystospasm.—Gr. *κύστις* bladder + *σπασμός* spasm. See Bladder Irritability.

Cyst, Retention, Epididymal.—See Spermatocele.

Cysts.—Gr. *κύστις* bag. See Tumors.

Distomiasis of the Bladder.—Gr. *δις* two + *στόμα* mouth. See under Cystitis.

Diverticula of the Bladder.—See Bladder Diverticula or Sacculations.

Dysuria.—Gr. *δυς-* ill + *οὖρον* urine. Painful or difficult urination.

Causes.—Urethritis; trigonitis; cystitis; vesico-urethral fissure; vesical distomiasis; pyelitis and pyelonephritis; urethral stricture; stricture of the neck of the bladder; urethral tumors; prostatitis; enlarged prostate; neuroses of the prostate; vesical calculi and foreign bodies; urethral calculus and foreign bodies; urethral injuries; bladder injuries; seminal calculus; vesical tumors; vesical tuberculosis; prostatic tuberculosis; vesicular tuberculosis; distended colon; masturbation or excessive coitus; excessive acidity of the urine; pyuria; crystals in the urine (see Nephrolithiasis); too high or too low specific gravity; hemorrhoids; abdominal pelvic operations; oxyuriasis; anal fissure and other rectal diseases; irritating ingesta, *e.g.*, ginger, radishes, spices, turpentine, salicylates, cantharides, quinine, urotropine, etc.; neuroses of the bladder (see Bladder Irritability).

Echinococcus Disease of the Bladder.—Gr. *ἐχῖνος* hedge-hog + *κόκκος* berry. See under Cystitis.

Kidney.—See Tumors of the Kidney.

Eczema of the Scrotum.—Gr. *ἐκζεῖν* to boil out; L. *scro'tum*, bag. See Eczema, in Part 5, Skin Diseases.

Ejaculation, Premature.—L. *ejacula'tio*, to throw; *præmatu'rus*, early ripe. See Sexual Neuroses.

Elephantiasis of the Scrotum; Lymph Scrotum.—Gr. for "elephant disease"; L. *lym'pha*, water; *scro'tum*, bag. Lymphatic obstruction and distention caused by the tropical filaria sanguinis hominis, or extensive disease or removal of the inguinal lymphatic glands.

Treatment.—The X-rays (*q.v.*) may be of service. The scrotal overgrowth may also be satisfactorily removed with the knife. First drain the parts of blood for some hours. Then apply an elastic bandage to the scrotum and a ligature at the base, as the vascularity is very great. Then dissect out the

penis and testicles by incisions along the dorsum of the penis and along the course of the cords, bearing in mind that hernia is apt to be present. Take away the whole of the affected skin to obviate recurrence.

Enlarged Prostate.—See Prostate, Hypertrophy of the.

Enteroptosis.—Gr. ἔντερον bowel + πτῶσις fall. See Splanchnoptosis, in Part 1, General Medicine and Surgery.

Enuresis; Incontinence of Urine.—Gr. ἐνουρεῖν to void urine; οὖρον urine; L. *incontinen'tia*. Enuresis is most commonly met with in children, and is then usually nocturnal.

Do not mistake false or paradoxical incontinence, due to the overflow of a distended bladder (see Retention of Urine) for true incontinence.

A. Incontinence in Male Adults.—CAUSES.—Cystitis; vesical tuberculosis; vasical calculus or foreign bodies; vesical tumors; paralysis or paresis of the sphincter, due to general paresis, tabes, injuries of the cord, compression of the cord by hemorrhage or exudate, myelitis, disseminated sclerosis, etc.; operative injury to the sphincter muscle; urinary fistula; irritating purulent or acid urine; atrophy of the prostate; hemorrhoids; hernia; hysteria; neurasthenia; epilepsy.

Treatment.—Correct the cause, if possible. To restore muscular tone, employ faradization three to five times weekly. Casper places the negative electrode over the bladder and the other (a metal sound covered, with the exception of the tip, with hard rubber) within the rectum, and employs as strong a current as the patient can endure, increasing the strength at short intervals for a few seconds, in order to impart an electric shock. Guyon "places one electrode in the membranous urethra, the other over the pubes." (Keyes.) Spinal and abdominal massage, manual or vibratory, is no doubt of benefit.

Strychnine in large doses and ergot may be of additional service as muscular tonics (see Part 11).

For hyperacidity of the urine, prescribe potassium salts or sodium bicarbonate.

For incontinence following perineal prostatectomy, which persists longer than several weeks, train the patient by filling his bladder with boric acid solution and "bidding him start—stop—start—stop," until the bladder is empty. (De Alexander—Keyes.) Chetwood's urethral clip is helpful, says Keyes.

B. Bed-Wetting in Children.—CAUSES.—Neurosis (90 per cent.—Kerley); thyroid inadequacy ("by far the commonest cause"—Leonard Williams); anæmia and malnutrition; rickets; adenoids; masturbation; chronic constipation; fecal accumulations; pin-worms; rectal polypus; anal fissure; preputial adhesions; phimosis; narrow meatus; balano-posthitis; vulvo-vaginitis; exposure to wet and cold; ill-breeding; terror; hyperacidity of the urine; crystals in the urine (see Nephrolithiasis); irritating ingesta; cystitis; renal or vesical stone.

The treatment is often unsatisfactory; but the affection disappears spontaneously at puberty.

Treatment.—Correct any possible etiological factor. Aim to improve the general health by means of fresh air day and night, adequate rest and exercise, avoidance of overstudy, regular hours of eating and sleeping, rest before and after meals, regulation of the bowels, a daily morning warm bath, before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, perhaps tonics (arsenic, iron, strychnine), and an abundant but unstimulating diet. Prohibit tea, coffee, ginger ale, beer, lemonade, spices, condiments, acid or sour foods, radishes, rhubarb, tomatoes, asparagus, cheese. Reduce meat, eggs, and other highly nitrogeneous foods, and sugar, if the urine is very acid and the specific gravity high (1.020 or over), and give alkalies and plenty of water, except at supper time. The supper should be light, and little or no water should be allowed in the evening. Le Fevre says: "Many cases of nocturnal polyuria, especially in children, can be controlled by abstinence from starchy foods and sugars at the evening meal."

Before retiring, the bladder should be emptied. The patient should sleep upon a hard mattress, the bed-covering should be light, and the foot of the bed elevated so as to keep the urine away from the sphincter. For the latter purpose, too, it is recommended that a towel be placed about the waist and knotted on the back, to prevent the child from sleeping on the back. The child may be taken up to urinate at 10 or 11 o'clock.

Atropine is recommended. It should be begun in small doses, and gradually increased until its physiological effects are noticed, *e.g.*, dilatation of the pupils and flushing of the skin.

Kerley employs a solution of one grain to the ounce (500 drops, gr. $\frac{1}{500}$ to the drop), and gradually brings the dose up to not more than one drop twice a day (at 4 P. M. and 7 P. M.), for every year of the child's age; thus, for a child of five years:

	4 P.M.	7 P.M.
First day	0 drop	1 drop
Second day	1 drop	2 drops
Third day	2 drops	2 drops
Fourth day	2 drops	3 drops
Fifth day	3 drops	3 drops
Sixth day	3 drops	4 drops
Seventh day	4 drops	4 drops
Eighth day	5 drops	5 drops

No improvement in the enuresis may be noted for several weeks. Kerley says: "The full treatment should be continued until the child has ceased wetting the bed for at least two weeks, when the daily amount of atropine should be reduced one-half and kept at this point for six weeks. If at the end of two months from beginning treatment there is no incontinence, the drug may be discontinued, but the dietetic regulations, particularly the dry supper, should be continued for three months longer." Strychnine may be given during the day. If the enuresis occurs only during the day, give the atropine after breakfast and the noonday meal, and give also strychnine and reduce fluids if taken in excess. To a child of five years, give of strychnine gr. $\frac{1}{100}$ twice daily, gradually increased to gr. $\frac{1}{50}$, t.i.d. (Kerley.)

Holt begins with $\frac{1}{1000}$ gr. of atropine for each year of the child's age up to seven years; and after the enuresis has ceased, continues it for at least two months in gradually diminishing doses.

If atropine proves ineffectual, discontinue its use, and try other drugs, *e.g.*, quinine, rhus aromatica, strychnine, strontium bromide, antipyrine, thyroid extract (see Part II).

Leonard Williams prescribes thyroid substance, a half-grain tabloid (Burroughs and Wellcome) once a day for a child of five, gradually increased, if well borne, to half a grain three times a day. A rise in the pulse rate, temperature, and weight "indicate that the dose is sufficient; a fall in weight shows that it is excessive." The treatment should be suspended for one week in every four; and also if the pulse should become more rapid than normal, or a sudden nasal catarrh occur. Williams also gives, besides the thyroid, the following:

℞ Calcii iodidi	gr. ii
Liquoris arsenicalis (Fowler's sol.)	♏ii
Tincturæ nucis vomicæ	♏ii
Syrupi aurantii	℥i
Aquæ, ad	℥ss

M. Sig.—℥ss, t.i.d.p.c. For a child of eight years.

This should be suspended, too, for one week in every four.

"Faradization of the bladder from three to five times weekly (see under Bladder Irritability) is of considerable value," says Casper.

Deep urethral injections of silver nitrate, gr. ¼ to 1 to the ounce, are also recommended; and if other measures fail, full dilation of the urethral sphincter with increasing sizes of steel sounds and Oberländer's dilators.

Cahier warmly recommends the rapid subcutaneous injection of physiologic salt solution (℥i ad Oi) directly into the perineum, on each side of the raphe—40 to 60 c.c. on each side for children; 80 to 100 c.c. for adults.

Chetwood's urethral clip, which prevents urination until removed, may be applied each night, if practicable (Keyes). The prepuce may be pulled forward and collodion smeared over to form a cap; this to be continued for two weeks. The collodion is easily picked off with the finger-nail. (D. Corrigan.)

Epididymis, Carcinoma of the.—Gr. *ἐπί* on + *δίδυμος* testis; *καρκίνος* crab + *-ωμα* tumor. See Tumors of the Testis, Epididymis, and Spermatic Cord.

Cyst, Retention of the.—See Spermatocele.

Inflammation of the.—L. *inflamma're*, to set on fire. See Orchitis and Epididymitis.

Retention Cyst of the.—See Spermatocele.

Sarcoma of the.—Gr. *σάρξ*, *σαρκός* flesh + *-ωμα* tumor. See Tumors of the Testis, Epididymis, and Spermatic Cord.

Tuberculosis of the.—See under Orchitis and Epididymitis.

Tumors of the.—See Tumors of the Testis, Epididymis, and Spermatic Cord.

Epididymitis.—See Orchitis and Epididymitis.

Epistaxis, Renal.—Gr. *ἐπίσταξις*; L. *ren*, kidney. See under Hæmaturia.

Erection, Deficient.—L. *erec'tio*. See Sexual Neuroses.

Excessive.—See Priapism.

Essential Renal Hæmaturia.—L. *essential'is*, inherent; *ren*, kidney. See under Hæmaturia.

Exostrophy of the Bladder.—See Part 2, Gynæcology.

Extravasation of Urine.—L. *ex'tra*, beyond + *vas*, vessel; *uri'na*, urine. This occurs as a result of rupture of the urethra, due either to trauma or to straining in cases of obstruction of the urethra by a stricture, stone, or foreign body, the urethral tissues being already weakened.

If the rupture occurs in front of the triangular ligament, the urine advances into the perineum, scrotum, and up the abdomen; there is great swelling, and gangrene occurs in places.

Treatment.—Perform external perineal urethrotomy at once, and drain the bladder through a soft retained catheter until healing occurs (see under Bladder Diverticula, for details concerning the use of the retained catheter). If stricture is the primary cause of the rupture, it should, of course, be corrected (see Stricture of the Urethra). In traumatic rupture, coapt the parts by means of fine catgut sutures not penetrating the mucous coat, and retain a catheter until healing occurs.

Wherever swelling and redness are present in the skin, make free multiple incisions for the purpose of draining off the accumulated urine, flush the wound with warm boric acid solution, ʒi-iv ad Oi, and pack widely open with gauze.

Fibroma Urethræ.—L. *fib'ra*, fibre + Gr. *-ωμα* tumor. See Tumors of the Urethra.

Fibrosis of the Corpora Cavernosa et Spongiosum.—L. *cor'pus*, pl. *cor'pora*, bodies, cavernous and spongy. (See Tumors of the Penis.)

Fig Warts.—See Verrucæ.

Filariasis, Vesical.—L. *filamen'tum*, delicate thread. (See under Cystitis.)

Fistula, Renal.—See Part 2, Gynæcology.

Fistula, Urethral.—L. *fis'tula*, pipe; Gr. *οὐρήθρα*.

Etiology.—Urethral stricture; periurethral abscess; tuberculosis; prostatic abscess; rectal abscess secondary to hemorrhoids; suppurating gumma of the penis; phagedenic venereal ulcer; gangrene of the penis; malignant neoplasms; rupture of the urethra (see Extravasation of Urine, for causes); prostatectomy.

Treatment.—1. Urethropenile Fistula.—First correct the cause. Treat any existing inflammation. If there is stricture, dilate the urethra gradually (see Stricture of the Urethra), and employ at the same time continuous catheterism. The eye of the retained catheter, which should be of soft rubber or silk, should be just within the bladder. If a silk catheter is used, the penis should be laid up over the groin in order to prevent ulceration at the penoscrotal angle. The bladder and urethra should be irrigated with warm boiled boric acid solution, ʒi-iv to the pint, before inserting the catheter. The bladder should be irrigated daily during the retention of the catheter, and the latter should be removed and cleansed and the urethra irrigated every three to six days. A tube reaches from the catheter to a urinal containing carbolic acid, 1 : 40, which should be cleansed and boiled daily. The penis should be kept wrapped in a moist bichloride (1: 10,000) compress.

Small fistulæ secondary to periurethral abscess are treated as follows: Expose the urethral end of the fistula by means of a wire urethral speculum, and enlarge the internal orifice of the fistula if it is very narrow. By means of a glass pipette with bent tip, inject into the fistula a few drops of a 25 per cent. etherial solution of hydrogen peroxide. Repeat this after three days. Then use a 5 per cent. solution every second day until the fistula closes (Chetwood quoted by Keyes). Horwitz injects into the fistulous tract, through a hypodermic syringe with a blunt needle, three drops of silver nitrate solution, gr. v ad ʒi.

If the fistula does not close, cauterize it with a fine wire heated to a dull red; or excise it (consult Horwitz in Keen's *Surgery*, Vol. iv, p. 581).

2. Urethroscrotal and Urethroperineal Fistulæ.—Correct the cause. Gradually dilate a constricted urethra (see Stricture of the Urethra), and employ continuous catheterism (see above). It is usually necessary, however, to perform a combined internal and external urethrotomy, lay open and scrape the fistulous tract, and employ continuous catheterism until healing occurs and the fistula is obliterated.

3. Urethrorectal and Urethroperineorectal Fistulæ.—In non-tuberculous and non-malignant fistulæ, if the fistula does not close spontaneously in a month or so, first remove any urethral obstruction, divide the sphincter ani posteriorly, and employ Tuttle's operation for the removal of the fistula (consult Horwitz in Keen's *Surgery*, Vol. iv, p. 584).

Fistula, Vesical.—L. *vesi'ca*, bladder. See Bladder Fistula.

Floating Kidney.—See Splanchnoptosis, in Part 1.

Fluke-Worm Disease of the Bladder.—See under Cystitis.

Foreign Bodies in the Bladder.—See Bladder, Foreign Bodies in the.

Foreign Bodies in the Urethra.—See Urethral Calculi and Foreign Bodies.

Foreskin, Inflammation of the.—See Balanoposthitis.

Frequency of Micturition, Increased.—L. *micturi're*, to urinate. See under Polyuria, in Part 1.

Gangrene of the Penis.—Gr. *γάγγραινα* mortification; L. *pe'nis.*

Etiology.—Inflammations; infectious diseases (scarlet fever, typhoid fever, typhus fever, smallpox, cholera, etc.); exposure to cold; diabetes; ergotism; chronic Bright's disease; acute alcoholism; trophic nervous diseases; extravasation of urine; carbolic acid poultice; mechanical constriction; traumatism; foreign bodies in the urethra; prolonged priapism; iliac thrombosis; senile sclerosis of the dorsal artery; phimosis; paraphimosis.

Treatment.—Attend to the cause. Elevate the penis and testicles, apply heat, and keep the parts clean and dry. Prescribe bromide camphor and opium (Part 11) to allay sexual irritation and prevent priapism. Maintain the general strength. Remove promptly all gangrenous sloughs. Employ perineal drainage if the anterior urethra is closed.

Gangrene of the Testicle.—L. *tes'tis*, testicle. See Orchitis; and Injuries to the Testicle.

Gastroptosis.—Gr. *γαστήρ* stomach + *πτῶσις* fall. See Splanchnoptosis, in Part 1.

Glans Penis, Inflammation of the.—L. *glans*, gland. See Balanoposthitis.

Gleet.—Chronic gonorrhœal urethritis. See Gonorrhœa.

Glenard's Disease.—See Splanchnoptosis, in Part 1.

Gonorrhœa.—Gr. *γονή* semen + *ῥεῖν* to flow. A local, sometimes systemic, contagious, pyogenic infection of mucous and serous membranes, caused by the gonococcus of Neisser, with an incubation period of one to ten days.

Gonorrhœal urethritis is ushered in by tickling at the external meatus, which is soon followed by burning on urination, recurring painful erections (chordèe), and a purulent, sometimes sanguinolent discharge containing the characteristic paired, biscuit-shaped, Gram-negative cocci.

Gram's method of staining is as follows (Webster): Place a drop of the pus on one end of a clean dry slide, and with a second slide held at an angle of 45° to the first one, touch the drop of pus, and when the latter has spread out by capillarity along the edge of the second slide, draw the latter along the first slide, still maintaining the angle of 45°, and exerting very little pressure. A cigarette paper may also be used as a spreader. Fix the smear thus made by passing it several times through the flame, allow it to cool, then cover with a solution consisting of 84 c.c. of aniline water (water saturated with aniline and filtered) and 16 c.c. of a saturated alcoholic solution of gentian violet. After two to three minutes, pour off the stain, wash in water, and without drying, cover with a solution consisting of one gram of iodine and two grams of potassium iodide, dissolved in 300 c.c. of water. After one-half to one minute, wash in water and treat with 95 per cent. alcohol until all the color is removed. Now wash in water, and cover with a dilute aqueous solution of safranin as a contrast stain. Allow the latter to act for only a few seconds, then wash off with water, dry between folds of filter-paper, and examine under an oil-immersion lens. Gram-positive organisms, *i.e.*, those not decolorized (tubercle b., smegma b., diphtheria b., pneumococcus, streptococcus, staphylococcus, and various saprophytic cocci) are stained deep blue, while the Gram-negative organisms (gonococcus, meningococcus, micrococcus catarrhalis, influenza b., typhoid b., colon b., Koch-Weeks b., and the Morax-Axenfeld b.) and the bodies of the pus cells take the red safranin stain. (Webster.)

Uncomplicated anterior urethritis is usually cured in from four to six weeks. Treatment should be continued until the discharge is free from gonococci.

Posterior urethritis, which occurs in from 50 to 95 per cent. of the cases, usually develops insidiously; or its occurrence may be manifested by a temporary cessation of the discharge, and an increased frequency of the desire to urinate; or it may be ushered in by severe symptoms, *e.g.*, chill, fever, frequent and urgent urination, burning pain not relieved when the bladder is empty, and often bleeding at the end of micturition. The diagnosis in posterior urethritis is made by the two-glass urinary test, the second glass voided being cloudy as well as the first. It is best to use the first urine passed in the morning for the test. To exclude phosphates as a cause of the cloudiness, add several drops of acetic acid to each glass of urine (the acid dissolves phosphates). The following plan may also be employed: Irrigate the anterior urethra by means of a soft catheter inserted down to the cut-off muscle, with potassium permanganate, 1 : 2500. Then have the patient empty his bladder. The urine should be clear of colored threads, if the posterior urethra is not involved.

The possible complications of gonorrhœal urethritis are: periurethritis and abscess, inflammation of the erectile tissues, balanoposthitis, lymphangitis, lymphadenitis, prostatitis and abscess, seminal vesiculitis and deferentitis, epididymitis, peritonitis, cysti-

tis, pyelonephritis, urethral stricture, systemic skin lesions, arthritis, osteo-arthritis, osteitis, periosteitis, bursitis, tenosynovitis, myositis, phlebitis, endocarditis, pleuritis, pneumonia, parotitis, systemic conjunctivitis, iritis, neuritis, meningitis, neuroses.

Prophylaxis.—Thorough cleansing of the genitalia with soap and hot water, as soon as possible after coitus, followed by the injection of 2 per cent. protargol, held in the urethra for five minutes.

Treatment.—A. Abortive Treatment.—This may be attempted in the prodromal stage, with tickling at the meatus and a slight glairy discharge. Pinching the urethra at a depth of two inches or more, one may inject, twice a day, for seven or eight days, about a pint of protargol, 5 per cent., or argyrol, 25 per cent. Says McDonagh, this "almost invariably proves successful," if done within four days of contagion and the subjective symptoms are slight. Horwitz injects a hot solution of potassium permanganate or bichloride of mercury 1 : 20,000 twice a day for seven or eight days, with good results. If a discharge persists, use astringent injections (see next page). Rest, a light, bland diet (see below), copious water drinking, and the usual balsamics are important. Discontinue treatment should hyperacute symptoms occur.

B. Treatment of Acute Urethritis.—Enjoin as much rest as possible, and prescribe a light, bland diet, with plenty of water between meals. Interdict alcohol, tea, coffee, ginger ale, carbonated beverages, lemonade, fruit, sour foods, pickles, sauces, salads, spices, condiments, mustard, pepper, horseradish, radishes, tomatoes, asparagus, salty foods, smoked and salted meats, preserved fish, herring, shellfish, cheese, greasy or fried foods, tobacco in excess. Keep the bowels active. Have the testicles and penis supported by means of a suspensory bag, and the meatus anointed with vaseline and covered with gauze as a protection to the clothing. The gauze should be changed frequently, to prevent damming back of the discharge, and all soiled dressing should be burned. Caution the patient against infecting the eyes.

In the acute stage, the penis should be immersed in hot water for ten minutes or longer, frequently, at least three times a day. This promotes the reaction of inflammation, and relieves ardor urinæ, scalding during urination, and chordée. The latter is also quickly relieved by immersion in cold water.

For the relief of painful urination and chordée, the following is useful:

℞ Potassii citratis vel acetatis ʒi (gr. xx per dose)
Tincturæ hyoscyami ..... ʒi (♏xx per dose)
Aquæ, q.s. ad ..... ʒiv
M. Sig.—One teaspoonful in one-third tumbler of water every three hours. (H. A. Kelly.)

Sodium bromide in large doses during the evening, and heroin, gr. 1/16 to 1/10, also lessen painful erections.

The balsamics, especially sandalwood, are of proven efficacy. Paul Vidal advises large doses. Some do not prescribe it in the acute stage.

℞ Olei santali ..... ♏x–xv–xx, aa capsulas No. 20
Sig.—One capsule, three to four times daily, p.c., or two hours a.c.

℞ Potassii citratis ..... ʒii–vi (gr. vi–xviii per dose)
Olei santali ..... ʒiv–vi (♏xii–xviii per dose)
Syrupi acaciæ ..... ʒi
Aquæ menthæ piperitæ, q.s. ad ..... ʒiii
M. Sig.—Teaspoonful in wineglassful of water after meals.

Discontinue sandalwood for a time if it causes lumbar pain or intestinal irritation.

℞ Oleoresinæ copaibæ, capsulas No. 20, aa, ♏v–xv
Sig.—One capsule, t.i.d.p.c.

℞ Balsami copaibæ ..... (♏x per teasp.)
Spiritus ætheris nitrosi,
Tincturæ lavandulæ compositæ, aa ..... ʒiii
Liquoris potassæ ..... ♏l
Syrupi ..... ʒviii
Mucilaginis acaciæ, q.s. ad ..... ʒxxv
M. Sig.—One or two teaspoonfuls, t.i.d.p.c., to be well shaken. (Lafayette mixture.)

Discontinue copaiba for a time if it causes much nausea or erythema.

℞ Oleoresinæ cubebæ, capsulas No. 20, aa ♏v–xv
Sig.—One capsule, t.i.d.p.c.

Discontinue cubebs if it causes much nausea or irritation of the neck of the bladder.

Methylene blue may be of some value:

℞ Methylthioninæ hydrochloridi,
Myristicæ, aa ..... gr. iiss–v
Mitte talis capsulas No. 20.
Sig.—One capsule, t.i.d.

Urotropine and salol are considered useless by Casper.

After the severe pain, redness, and swelling have subsided, have the patient inject three or four times a day, with a glass or hard-rubber hand syringe holding not over four drams, and always after first urinating, a 5 to 10 to 20 per cent. argyrol solution

or 0.25 to 1 to 2 per cent. protargol solution, or 0.1 per cent. silver nitrate solution, to be retained three or five or ten minutes by the watch, according to the pain produced. He should try to retain it fifteen minutes at bedtime, but should allow it to flow out if it causes pain. He should inject at first one dram of the solution, and gradually increase to no more than four drams. Argyrol is less irritating than protargol, and protargol is less irritating than silver nitrate. Stains caused by argyrol can be removed with a 1 : 500 solution of corrosive sublimate. Should severe pain, swelling, profuse purulent discharge, hemorrhage, or chordée at any time occur, cease local treatment until the acute inflammation has subsided.

After about ten days or longer, the period of decline sets in, and the discharge becomes mucopurulent. At about the end of the fourth week, when only a mucoid discharge is present, discontinue the silver preparations, and substitute astringent injections:

℞ Zinci sulphatis ..... gr. ii–vi
Liquoris plumbi subacetatis diluti .. ʒiii

M. Sig.—Shake well, and inject two or three times daily. (Keyes.)

℞ Zinci sulphatis ..... gr. ii–vi
Bismuthi subnitratis ..... ʒi
Aquæ, q.s. ad ..... ʒiii

M. Sig.—Shake well and inject two or three times daily. (Hugh Cabot.)

℞ Zinci sulphatis,
Pulveris aluminis, aa ..... gr. iv–xii
Acidi carbolici ..... gr. iv
Aquæ ..... ʒiv

M. Sig.—Shake, and inject two or three times daily. (Ultzmann.)

℞ Zinci sulphatis ..... gr. xvi
Plumbi acetatis ..... gr. xxx
Extracti krameriæ fluidi ..... ʒiv
Tincturæ opii ..... ʒiii
Aquæ destillatæ, q.s. ad ..... ʒvi

M. Sig.—Shake, and inject two to four times daily.

℞ Hydrargyri chloridi corrosivi ..... gr. ⅛–½
Zinci sulphocarbolatis ..... gr. xii–ʒi
Acidi borici ..... ʒii
Acidi carbolici ..... gr. xii–xv
Boroglycerini (25 per cent.) ..... ʒii
Aquæ destillatæ, q.s. ad ..... ʒvi

M. Sig.—Shake well, and inject twice daily, after urinating. Dilute if painful. (White and Martin.)

After the symptoms have disappeared, gradually weaken the astringent injections by replacing every syringeful removed by a syringeful of boiled water. If no symptoms return after seven to ten days of the weaker injections, the patient may be considered cured. No alcohol or sexual indulgence should be allowed for at least three weeks.

The following tests of a cure are practically conclusive: Massage the prostate and vesicles vigorously; if no discharge results after forty-eight hours, give three glasses of beer; if there is still no discharge after forty-eight hours, dilate the urethra with a full-sized sound. Keyes says, "If these three tests fail to excite a discharge, the gonococci have almost certainly disappeared, even if the urine or expressed prostatic secretion continues to show pus."

In the period of decline, the home treatment may be supplemented by office treatment (Hugh Cabot):—Daily or several times weekly the urethra may be irrigated by means of a fountain syringe with a blunt nozzle attached, with potassium permanganate, 1 : 5000 or 1 : 6000, increased, as the inflammation subsides, to 1 : 2500 to 1 : 2000 to 1 : 1000; or silver nitrate, 1 : 50,000 to 1 : 5000.

To irrigate the anterior urethra, elevate the reservoir two feet above the penis, approach the nozzle to the meatus gradually, and allow free exit of the fluid beside the nozzle; whereas, in cases of posterior involvement, raise the pressure by elevating the reservoir, apply the nozzle snugly to the meatus, and have the patient breathe through the mouth and bear down as though to empty the bladder, when the fluid will enter the latter. A very small soft catheter may be cautiously employed, if desired, instead of hydraulic pressure.

During the first week the patient should visit the physician every day or two, and thereafter twice weekly, and the two-glass test should be employed at intervals to ascertain whether or not the posterior urethra has become involved.

For posterior urethritis, employ daily irrigations with silver nitrate, 1 : 50,000 to 1 : 10,000; or potassium permanganate, 1 : 8000 or 1 : 6000; or protargol, 1 : 2000; or argyrol, 1 : 100. Keyes distinctly prefers the silver salts to permanganate. He says, "Permanganate reduces the inflammation much more rapidly and clears the urine far more brilliantly than the silver salts, but gives a much larger proportion of chronic gonorrhœas." McDonough lauds sodium salicylate (Part 11) by mouth in acute posterior urethritis.

The occurrence of acute inflammatory symptoms demands, of course, the immediate cessation of local treatment until the acute symptoms have subsided. When posterior involvement is accompanied by much pain, fever, hemorrhage, dysuria, and tenesmus, put the patient to bed on liquid diet and flaxseed tea in large quantities, open the bowels, place hot water bags over the

hypogastrium and perineum, and employ frequent hot sitz-baths, or slow hot rectal irrigations lasting one hour and repeated every two or three hours, using a Kemp or Chetwood double-current tube. If need be, a hypodermic of morphine and atropine may be injected into the perineum or given by mouth. For retention of urine if the patient cannot urinate while in the hot sitz-bath, catheterize him with a small soft catheter regularly.

The above symptoms probably mean acute prostatitis, and the prostate may be found to be enlarged and very tender. Should suppuration occur in the prostate, the abscess may break into the urethra or rectum with spontaneous cure, rarely elsewhere. Hugh Cabot advises reasonably early operation, preferably per perineum, in abscess cases, before rupture occurs.

Acute epididymitis occurs only after the posterior urethra has become invaded. Stop local treatment, put the patient to bed, open the bowels, support the testicles, and apply heat, with hot flaxseed poultices. One may apply guaiacol in glycerine, 50 per cent. once or twice daily (see Orchitis and Epididymitis, for further important information). Two weeks or longer after the testicular symptoms have subsided, resume the hot silver or permanganate irrigations, and instil into the posterior urethra with a Keyes-Ultzmann syringe, every second day, 5 to 20 minims of a 1 to 2 per cent. silver nitrate solution; or inject into the bladder, posterior urethra and bulb, every second day, 3 to 6 ounces of a 1 per cent. silver nitrate solution, through a soft rubber catheter and hand syringe, pressing the lips of the meatus together during the injection to distend the urethra. Gonorrhœal cystitis is also thus treated.

Should periurethral inflammation occur, apply compresses wet with weak bichloride solution, or three per cent. aluminum acetate solution, or ichthyol, and bind the penis to the abdomen. Should an abscess form, open it preferably within the urethra. If an external incision is chosen, make it above and on the side of the corpus spongiosum and urethra, and not below.

Acute inflammation of the corpora cavernosa, which is very rare, is treated as described above.

Iodine, ichthyol, or blue-ointment may be applied to buboes.

Consult Cowperitis, Balanoposthitis, Prostatitis, Seminal Vesiculitis, and Fistula.

"The occurrence of periurethral abscess balanitis, or lymphangitis does not call for cessation of local treatment."

If, in the terminal stage of acute urethritis, vesicular and prostatic massage reveals the presence of prostatitis, practice gentle massage "not oftener than every other day, nor less often than once a week." The vesicles and prostate are examined for inflammation as follows: First have the patient pass a little urine to wash out the anterior urethra. The vesicles and prostate are then massaged, a small soft catheter introduced, and the first urine passing through this examined for pus (Keyes).

Cases which persist beyond the sixth week are considered chronic, and should be so treated. Remember that too energetic treatment may itself cause catarrh and a continuation or augmentation of the discharge.

Ionic medication is recommended for gonorrhœa (see in Part 1). A copper or zinc rod wrapped with fine lint wet in a two per cent. solution of zinc sulphate is introduced through a cannula down to the neck of the bladder, whereupon the cannula is withdrawn. The rod is attached to the positive pole of a galvanic battery, and four milliampères of current gradually turned on, and allowed to act for fifteen minutes. The treatment is repeated in ten days. In chronic cases ten milliampères are employed for fifteen minutes once a week.

Acriflavine (*q.v.* under Drugs) is a recently introduced urinary antiseptic which is highly diffusible, penetrating the mucosal tissues. In anterior urethritis, about 3 c.c. may be injected twice daily, to be retained five minutes; and in posterior urethritis, 15 to 30 c.c. into the bladder, to be retained until the next voiding of urine. The twice-daily injections are repeated until all organisms have disappeared from the discharge, and then reduced to once daily until the case is considered cured (perhaps about twelve days). In the event of recurrence, wait about five to seven days, or until the maximum of immunity has been established, before resuming treatment. In the lavage method of treatment by means of a suspended fountain syringe employ a strength of 1 : 4000, one pint twice daily.

In some cases in which acriflavine is apparently not satisfactory, the silver preparations may give good results.

Mercurochrome—220 (see Drugs) is another new urinary antiseptic.

The Australian Army Medical Corps packs the anterior urethra with gauze strips, ½ to

¾ inch wide and 7 inches long, soaked in argyrol solution, 5 per cent. The gauze is rolled into a cylinder, soaked in the argyrol solution, one end folded over the bulbous tip of a probe, and introduced into the urethra until resisted at the bend. The penis is then gently massaged toward the root for five minutes, when the pack is removed while the meatus is compressed in order to retain as much as possible of the argyrol in the urethra. Then a second pack is introduced and retained four hours or until the next urination. About two or three packs may be inserted daily until the morning discharge (before urinating) ceases or becomes clear watery (usually by the fifth morning), when gentle irrigation with potass. permanganate, 1 : 5000, t.i.d., is substituted.

Argyrol solution should be freshly prepared, preferably daily. A solution that is over two weeks old is probably of very little value as an antiseptic.

C. Chronic Urethritis.—Chronic urethritis is usually a posterior urethritis, and consequently usually implies the existence of a chronic prostatitis. There are usually no other symptoms than a scanty mucoid or mucopurulent discharge in the morning ("morning drop") and shreds in the urine. If the anterior urethra alone is involved, the two-glass urinary test will reveal a cloudy first glass while the second glass remains clear. But even then the posterior urethra may be involved. In chronic posterior urethritis both glasses usually contain threads. Irrigate the anterior urethra, by means of a soft catheter inserted down to the cut-off muscle, with potassium permanganate, 1 : 2500; then have the patient empty his bladder. The urine should be clear of colored threads if the posterior urethra is not involved.

Endoscopic examination reveals congested, granular patches, erosions, or papillomatous vegetations. On inserting a steel sound and passing the finger along the under surface of the urethra, small nodules may be felt if the glands of Littré are inflamed.

If the anterior urethra alone is involved, care should be taken in applying treatment not to pass beyond the cut-off muscle. To irrigate the anterior urethra by the hydraulic method, elevate the reservoir two feet above the penis, approach the nozzle to the meatus gradually, and allow free exit of the fluid beside the nozzle; whereas, in cases of posterior involvement, raise the pressure by elevating the reservoir, apply the nozzle snugly to the meatus, and have the patient breathe through the mouth and bear down as though to empty the bladder, when the fluid will enter the latter. Or, in posterior urethritis, after irrigating the anterior urethra, a soft rubber catheter may be passed into the bladder, the latter filled, the catheter then withdrawn, and the bladder evacuated by the patient.

Irrigate the urethra every day or every other day with potassium permanganate, 1 : 8000 to 1 : 5000 to 1000, alternating occasionally with silver nitrate, 1 : 10,000 to 1 : 2000 or protargol, 0.5 to 1 to 2 per cent. After the urinary turbidity has disappeared, lengthen the intervals of treatment to every three or four days, and so on until discontinued. At home the patient may use weak astringent injections twice daily. Remember that the too frequent use of astringents may, in itself, cause catarrh; therefore intermit the irrigations and injections every few weeks. The presence of prostatitis will keep the discharge up. It is diagnosed by the presence of pus cells in the prostatic secretion obtained by massaging the prostate after urination. In such cases, massage the prostate systematically, for months, three times weekly, at the same time employing irrigations and weak astringent injections.

After irrigating the urethra, the anterior or posterior urethral endoscope may be inserted, and ulcers, erosions, and granulations touched once or twice a week, by means of an applicator, with carbolic acid, 2 per cent. alcoholic solution, or silver nitrate, 5 to 20 per cent.; or copper sulphate, same strength, or iodine and carbolic acid, equal parts. Or, instillations of a 0.5 to 1 to 2 per cent. silver nitrate, or a 0.25 to 2 per cent. protargol solution may be made, introducing 5 to 10 minims of the solution drop by drop to the parts required, by means of a Guyon instillating syringe with catheter attached, or if the latter will not pass the bulb, a Keyes-Ultzmann instillating syringe. Papillomata or polypi may be removed with the curette or snare, and the base cauterized, preferably with the galvanocautery. Urethroscopic treatment, however, is very rarely necessary (Keyes).

If there is periurethral infiltration and thickening, pass lubricated steel sounds of gradually increasing calibre, once or twice a week, following irrigation. Keep the sound in the urethra five minutes, unless painful, at the same time massaging the under surface of the urethra. Employ sounds up to 23 or 24 F., then dilators (Oberländer's or Kollmann's), and if necessary the Otis-Kreisl urethrotome, making

one or more incisions at the site of infiltration. After dilating and massaging the urethra, irrigate, and then instil an ointment with Young's or Robbin's ointment applicator or Keyes's instillator. Applications as far as the compressor urethræ muscle may be made on a cotton-wound Kollman intra-urethral probe. Ointments should be prepared with lanolin as a base.

℞	Acidi carbolici	gr. x
	Adipis lanæ hydrosi	ʒi (Young.)
℞	Iodi	gr. vi
	Potassii iodidi	gr. xxx
	Olei amygdalæ dulcis	ʒi
	Adipis lanæ hydrosi	ʒi (Finger.)
℞	Acidi salicylici	gr. v
	Adipis lanæ hydrosi	ʒi (for epithelial thickening).
℞	Iodoformi	gr. xlviii
	Adipis lanæ hydrosi	ʒi
℞	Ichthyolis	gr. xlviii
	Glycerini vel adipis lanæ hydrosi	ʒi

For hypersensitiveness, Casper recommends the following:

℞	Cocainæ	gr. iiss
	Zinci oxidi	ʒss
	Unguenti acidi borici	ʒiiss
	Olei amygdalæ dulcis	ʒi
	Adipis lanæ hydrosi	ʒiv

When using sounds, administer urotropine and irrigations in order to prevent acute inflammation. The presence of gonococci or free pus in the urethra renders dilatation dangerous.

"Follicular (infiltrative) urethritis may be treated locally by exposing the diseased orifice by means of the endoscope, evacuating any discharge with Kollman's capillary aspirator, and then injecting any desired preparation into the structure of the gland by means of Kollman's cannula and syringe." (Horwitz). Or, in inveterate cases, the "diseased glands may be destroyed by means of Kollmann's or Oberländer's electrolytic needles, or split open with Kollmann's or Bierhoff's knife," or Janet's trajectotome. "These instruments are used through the urethroscope under direct guidance of the eye. Kollmann's needle is connected to the negative pole of a battery supplying the constant current and a flat electrode is attached to the positive pole. The flat electrode is placed on the thigh, the needle is passed through the urethroscope and its point inserted into the opening of the diseased gland. From three to five milliampères (no more) of the current are now turned on and the needle left in situ for one to two minutes. Oberländer's double needle may be used in this way, or one needle may be attached to the positive pole and the other to the negative. The current should always be turned off before the instrument is withdrawn from the urethra. Not more than two or three glands should be destroyed at one sitting." "Mundorff advises the use of large steel sounds during the process of healing" (Casper). Says Keyes: "Suppurating follicles are best treated by destroying them with a galvanocaustic needle, which is plunged into the suppurating focus." After cutting operations, no dilatation should be employed until gonococci have disappeared.

If, in spite of all treatment, the discharge persists, the parts should be allowed a rest for a time, when the discharge may, in consequence, disappear. Over-treatment often does more harm than good.

The discharge may resist every therapeutic measure. "If the secretion obtained by stripping the urethra, massaging the prostate, and probing with the bougie à boule has been found free from gonococci after repeated examination, and if they do not appear after the urethra has been subjected to different forms of irritation, then we may discharge the patient from treatment, and also give our consent to his marriage." "In my opinion it is not necessary to treat the patients as long as pus cells continue to be found in the filaments or in the discharge. The shreds often remain permanently" (Casper). See also Ionic Medication.

A full diet and open air exercise are to be enjoined in chronic urethritis. A tonic may be prescribed, if deemed advisable.

In systemic infection, autogonoccus vaccine or serum is recommended. Keyes says, begin with a dose of "40,000,000" (Holt gives these doses also for children) dead gonococci, "or, in acute cases, 60,000,000 and increase by 20,000,000 or more at each dose (unless the symptoms are controlled or the reaction is marked) until a dose of 100,000,000 is reached. Only in exceptional cases is it necessary to go higher than this. The injections are given into the muscle. They should not be repeated oftener than every other day." Keyes praises the vaccine highly in systemic and beginning local complications. If the serum is used it is given in doses of 2 to 4 c.c. every day or every second or third day, injected deeply, but not necessarily into a muscle, gradually increased to 6 to 8 c.c. every fifth day.

Says McDonagh: "A vaccine to be potent must be prepared, without the employment of heat, from a fresh culture, or the first subculture which has not been allowed to grow for more than forty-eight hours. The vaccine should be fresh, as it begins to deteriorate after the tenth day, even when kept in the dark at 0° C." "The initial dose of ordinary vaccine, given subcutaneously or intramuscularly, should not exceed five million, and the second dose of the same size should not be given for ten days or more; and each subsequent injection of very gradually increasing doses should not be given more than every seven or ten days." "Injections of sensitized vaccines should be given on three successive days in doses of 20, 50, and 100 million. If the patient has no reaction, doses of 200, 500, and 1000 million may be prescribed on the fourth, fifth, and sixth days. Should a reaction appear after any one of these, fourteen to twenty-one days should elapse before a further series is given."

Vaccines and serums are of questionable utility.

D. Rectal Gonorrhæa.—Employ daily irrigations or injections of potassium permanganate, 1 : 5000 to 1 : 200 to 1 : 25; or silver nitrate, 1 : 4000; or protargol 2 to 10 per cent.; or alum, ʒi ad Oi; or tannin, ʒi ad Oi; the poisonous solutions to be followed by plain warm water. Swab fissures and ulcers with silver nitrate, 10 to 20 per cent., first dilating the sphincter ani (see Fissure in Ano, in Part 1, on General Medicine and Surgery). Apply zinc ointment to granulating surfaces. Employ hot sitz-baths. It is very resistant to treatment, about four to six months being required for a cure.

E. Buccal Gonorrhæa.—Employ frequent astringent mouth washes, *e.g.*, zinc sulphate, gr. ii–iv to the ounce. It lasts usually a few weeks.

F. Gonorrhæal Arthritis and Other Complications.—Consult the appropriate Part of this book.

Hæmatocele.—Gr. *αἷμα* blood + *κήλη* tumor. Hemorrhage within the tunica vaginalis. It is rarer than scrotal hæmatoma (*q.v.*). Employ the aspirating syringe in order to exclude new growths.

Etiology.—Injury of the normal testis; injury of a hydrocele from puncture or external trauma; chronic hemorrhagic inflammation, with thickening of the tunica vaginalis.

Treatment.—For traumatic hæmatoma occurring in the normal testis, put the patient to bed, open the bowels, support the testicles, and apply cooling lotions, *e.g.*, lead and opium wash or aluminum acetate solution. (see Part 11). Have the patient wear a suspensory bag when he gets up. Incise and evacuate the clot if the tension is great.

Treat hemorrhagic hydrocele by radical operation as for hydrocele.

Chronic hemorrhagically inflamed sacs should be dissected out and the wound closed with temporary (twenty-four hours) drainage. Keyes says: "Ancient hæmatocele demands castration."

Hæmatochyluria.—See Part 1, General Medicine and Surgery.

Hæmatoma, Scrotal.—Gr. *αἷμα* blood + *-ωμα* tumor; L. *scro'tum*, bag. Effusion of blood external to the tunica vaginalis. It is more common than hæmatocele.

Treatment.—Employ rest and a supporting bandage. Evacuate the clot and drain should infection occur.

Hæmatoporphyrinuria.—Gr. *αἷμα* blood + *πορφύρεος* purple + *οὖρον* urine. See Hæmoglobinuria, in Part 1.

Hæmaturia.—Gr. *αἷμα* blood + *οὖρον* urine. Hæmaturia, or the occurrence of red blood cells in the urine, is distinguished from hæmoglobinuria (*q.v.*,) by the presence of red blood-cells in the urinary sediment. Employ the cystoscope and ureteral catheterization for diagnostic purposes in regard to the source of the bleeding. The presence of numerous casts points to the kidney.

Etiology.—Hæmophilia; purpura; scurvy; leukæmia; pernicious anæmia; splenic anæmia; the hemorrhagic form of infectious diseases, *e.g.*, malaria, yellow fever, cholera, typhoid fever, typhus fever, smallpox, septico-pyæmia, scarlet fever, relapsing fever, cerebrospinal fever, influenza, pneumonia; kidney irritants, *e.g.*, turpentine, cantharides phosphorus, aniline dyes, carbolic acid; varicose veins of the bladder; passive congestion due to heart, lung, liver, or kidney disease; sudden withdrawal of urine from a distended bladder; traumatism to the kidney, ureter, bladder, or urethra, due to external violence, instrumentation, foreign bodies, calculi, the passage of calculi or crystals (see Nephrolithiasis); irritation of a highly concentrated or hyperacid urine; uric acid infarctions; local infections, *e.g.*, urethritis, cystitis, ureteritis, pyelitis, gonorrhœa, tuberculosis, distomiasis, filariasis, acute nephritis; chronic nephritis with local arteriosclerotic infarcts; renal tumors; vesical tumors; amyloid kidney; polycystic kidney; embolic infarction of the kidney; floating kidney; aneurysm of the

renal artery; varicose veins of a renal papilla; prolonged exercise; angioneurosis (?); prostatitis; prostatic hypertrophy.

There is a so-called idiopathic or essential renal hæmaturia (called also nephralgia, neuralgia of the kidney, hæmaturic nephralgia, idiopathic nephralgia, renal hæmophilia, renal epistaxis, and angioneurosis of the kidney) that is not associated with any local pathological condition, unless it be varicosity of the veins of a renal papilla. A constant or intermittent hæmaturia occurs, sometimes associated with severe pain; or pain may occur alone. Casper says that renal pain may be caused by "firm adhesions between the true capsule of the kidney and the surrounding fatty capsule," and that decapsulation will cure such cases. Pain may also be caused by spasm of the ureter, and is then cured by the passage of a catheter. The injection of adrenalin through a ureteral catheter has been curative. The following drugs are recommended for the bleeding, viz., rectified spirits of turpentine, ♏viii, in capsule, t.i.d.; cantharides in small doses; fl. ext. senecio aureus, ♏xxx, t.i.d.; and Merck's stypticin, gr. iv, t.i.d. Keyes says, if other measures fail, perform pyelotomy and curette the bleeding papilla; and if this fails, perform nephrectomy.

Treatment of Severe Vesical Hæmaturia.—Insert a retention catheter (see under Bladder Diverticula) to quiet the bladder, and inject about three ounces of hot silver nitrate solution, 1 : 1000 to 1 : 500; or the same amount of Merck's sterilized solution of gelatine, 2 to 5 per cent., hot; or fl. ext. hydrastis, one ounce to the pint; or antipyrine, 4 per cent.; or a heaping teaspoonful of Squibb's surgical powder (contains alum) suspended in 500 c.c. (one pint) of hot water ("the best application I know," says Keyes). Adrenalin, 1 : 5000 to 1 : 1000, is not satisfactory, say Casper and Keyes. Rest in bed is essential. Opium, ergot, stypticin, and hydrastis (see Part 11) may be useful.

If these measures fail, resort to suprapubic cystotomy, and ligate or cauterize any bleeding points.

To evacuate clots, employ a large woven catheter, or Brodie's overcurved silver catheter, or Gross's blood catheter, or Bigelow's lithotrite and evacuator, and forcibly inject or irrigate with hot salt or alum solution, ℥i ad Oi; or hot phenol solution, 1 per cent.; or a cool solution of sodium bicarbonate.

Hæmoglobinuria.—See Part 1, General Medicine and Surgery.

Hæmophilia, Renal.—Gr. αἷμα blood + φιλεῖν to love; L. *ren*, kidney. See under Hæmaturia.

Hemorrhage, Urinary.—Gr. αἷμα blood + ῥηγνυναι to burst forth; οὖρον urine. See Hæmaturia.

Hepatoptosis.—Gr. ἧπαρ liver + πτῶσις falling. See Splanchnoptosis, in Part 1.

Hernia.—L. See Hernia, in General Medicine and Surgery, Part 1.

Herpes Progenitalis.—Gr. ἕρπειν to creep; L. *pro*, before, + *genital'is*, genital. A non-contagious recurrent affection of the glans and prepuce, characterized by the appearance of one or more small itching vesicles situated upon an inflamed or reddened base, the vesicles later breaking down into ulcers, and usually healing in about one or two weeks.

Etiology.—Local irritation due to uncleanliness, excessive coitus, irritating discharges, and a long, tight foreskin; excesses in eating or drinking; lithæmia; digestive disturbances; debility; nervous depression; atmospheric changes; cold.

Treatment.—Attend to the cause. Enjoin adequate rest and exercise, fresh air day and night, a simple diet, regular hours of eating and sleeping, rest before and after meals, regulation of the bowels, and general and local cleanliness.

A tonic may be useful, *e.g.*, iron, arsenic, codliver oil (Part 11).

℞ Elixiris ferri, quininæ, et strychninæ phosphati..... ℥iv
Sig.—One teaspoonful in water, t.i.d.p.c.

℞ Acidi nitrohydrochlorici diluti..... ℥ii (♏v per dose)
Aquæ..... ℥iss
Strychninæ sulphatis... gr. i (gr. ¼ per dose)
Misce et adde
Tincturæ gentianæ compositæ,
Tincturæ cardamomi compositæ, aa q.s. ad..... ℥vi
Sig.—Dessertspoonful after meals in water. (H. C. Wood.)

Cleanse the parts twice daily with boric acid solution, ℥i ad ℥iv, and dust with an antiseptic powder, *e.g.*, calomel; calomel and bismuth subnitrate, equal parts; boric acid and bismuth or zinc oxide, equal parts; aristol; nosophen; etc.; or apply the following astringent lotion two or three times daily:

℞ Calaminæ,
Zinci oxidi,
Acidi borici, aa..... ℥i
Alcoholis..... ℥ii
Aquæ, q.s. ad..... ℥iv. (Shake well)

Or, particularly useful for the relief of burning and itching:

℞ Calaminæ,
Zinci oxidi, aa..... ʒi–ii
Acidi borici..... ʒi
Glycerini..... ♏xxx
Acidi carbolici..... ♏x–xxx
Liquoris calcis..... ʒi
Aquæ, q.s. ad..... ʒiv (Shake well)

Or, zinc sulphate solution, 0.5 to 2.0 per cent.

Zinc oxide ointment may be of service. Apply silver nitrate, gr. x–xl ad ʒi to persistent ulcers.

In obstinate and recurring cases, apply daily, for ten minutes, the galvanic current of one-half to two milliampères, with the positive electrode over the lower lumbar region and the negative electrode over the affected part; or apply a mustard poultice over the lumbar spine every day or two. Arsenic is also advised. Circumcision is advisable in relapsing cases.

Horns of the Penis.—See Tumors of the Penis.

Hydatid Disease of the Bladder.—Gr. *ὑδατίς* vesicle. See under Cystitis.

Kidney.—See Tumors of the Kidney.

Hydrocele.—Gr. *ὕδωρ* water + *κήλη* tumor. An accumulation of serous fluid within the tunica vaginalis of the testis or spermatic cord.

A. Acute Hydrocele.—Acute hydrocele is diagnosed by the sudden occurrence of a painful, red, fluctuating swelling in front of the testis. It is translucent unless blood or pus is present. Withdraw some of the fluid with a hypodermic syringe.

Etiology.—Traumatism; acute (usually gonorrhœal) epididymitis; acute infectious diseases; tuberculosis; syphilis; injection of irritating fluids in chronic hydrocele; unclean tapping of a chronic hydrocele.

Treatment.—This is the same as that of acute orchitis and epididymitis (*q.v.*). If great tension and pain occur, incise and drain with a broad strip of gutta percha. Should suppuration occur (diagnosed by means of the aspirating syringe), make a free incision and drain, preceded or not, as deemed advisable, with hot boric acid irrigation, ʒi–iv ad Oi. Keep the parts elevated.

B. Chronic Hydrocele.—Chronic hydrocele is slow-growing, painless, usually translucent, distinctly fluctuant, not tympanitic, and with no impulse on coughing. Hydrocele of the testis grows from below upward; it is usually pear-shaped (larger below than above) or oval, and is usually situated in front of the testis. The diagnosis of hydrocele of the cord "can usually be made from the sense of fluctuation and the delicate bluish color of the sac, showing through the thin integument." (Bevan.)

Hydrocele should be distinguished from hernia. Do not resort to puncture unless hernia can be excluded by bringing the fingers together above the tumor and feeling nothing but the normal tissues of the cord. (Keyes.)

Etiology.—Traumatism; gonorrhœal inflammation, with or without involvement of the epididymis; chronic orchitis or epididymitis; tuberculosis; syphilis; neoplasms; typhoid fever; small spermatocele within the tunica vaginalis; lesion of the hydatids of Morgagni; congestion due to venous obstruction (the result of a hernia or truss); elephantiasis; congenital continuation of the tunica vaginalis with the peritoneum (congenital hydrocele: reducible; may be complicated by hernia); developmental anomaly (infantile hydrocele), differing from a congenital hydrocele by being shut off from the peritoneal cavity, and being therefore irreducible; it is rarely bilocular, *i.e.*, partly in the scrotum and partly in the abdomen.

Treatment.—If the sac-wall is thin, the injection treatment may be tried. One injection cures more than 80 per cent.; but two or three injections are sometimes required. First cleanse the parts, and inject a few drops of 1 per cent. cocaine solution into the skin, "in front and a little above the centre of the swelling." Then plunge in a cannula and trocar perpendicularly to the long axis of the scrotum, remove the trocar, and withdraw all the fluid, using a half-ounce aspirating syringe for the last portion. Then inject through the cannula 5 to 20 drops of pure carbolic acid and withdraw the cannula. With a finger over the puncture knead the sac so as to bring the acid in contact with all parts of its inner wall. Keep the patient in bed until the resulting acute reaction subsides, *i.e.*, two to four days; and have him wear a suspensory bag for three to six weeks. If, after ten to fourteen days, the sac is still enlarged, aspirate again without injection. Small hydroceles in infants disappear spontaneously in two or three months. Large ones may be cured by aseptic aspiration with a hypodermic syringe, the puncture being sealed with collodion.

Andrews's modification of the Jabouley operation, called Andrews's bottle operation, is of advantage in thin-walled sacs (consult Keen's *Surgery*, Vol. IV, p. 607).

In old-standing, thick-walled sacs, and

in hour-glass hydroceles, incise the sac, stitch to the skin, and drain with gauze, or gutta-percha, or rubber tube, with, if desired, daily irrigations with iodine solution of the color of sherry wine, until the sac fills with granulation tissue, or preferably, excise the parietal wall of the sac and close immediately, or drain for twenty-four hours.

Congenital and infantile hydroceles and those occurring in hernial sacs require excision of the sac.

Hydronephrosis.—Gr. *ὕδωρ* water + *νεφρός* kidney. Hydronephrosis, or distention of the renal pelvis with urine, is the result of gradual incomplete urinary obstruction, permanent or intermittent.

Fixed hydronephrosis is diagnosed by the presence of a gradually growing, non-inflammatory tumor, by ureteral catheterization, exploratory incision, etc. Intermittent hydronephrosis is characterized by the occurrence of attacks of severe pain (Dietl's crises), associated with the sudden appearance of a movable, enlarged kidney, which collapses coincidently with the relief of the pain and the passage of a large amount of urine.

Etiology.—A. Congenital.—Partial stenosis of the ureter at either extremity; oblique insertion or high insertion of the ureter into the renal pelvis; valve formation; compression of the ureter by a supernumerary or aberrant renal blood-vessel; double ureter; malpositions and kinking.

B. Acquired.—Phimosis; urethral stricture; prostatic hypertrophy; vesical tumors; thickened bladder-walls; pelvic or abdominal tumors; cancer of the cæcum; retroperitoneal pelvic sarcoma; ureteral tumors; ureteral gumma; periureteritis; periureteral adhesions; ureteritis (colon, gonococcus, or tubercle infection); calculus, blood-clot, or echinococcus cyst in the ureteral canal; traumatism due to the passage of a stone, to external violence or to a temporary ligature or clamp; tumor or stone in the renal pelvis; aneurysm of the iliac artery; scoliosis causing renal displacement; movable kidney, producing a kinking of the ureter, and resulting intermittent hydronephrosis; compression of the ureter by perirenal or periureteral blood-clots due to trauma.

Treatment.—Remove the cause, if possible. Stretch ureteral strictures by means of bougies; remove obstructing stones, tumors, etc.; resect diseased portions of the ureter; perform pyeloplication upon a dilated renal pelvis; do a ureteropyelostomy, if indicated; employ a pad and binder, or nephropexy, or decapsulation for movable kidney (see under Splanchnoptosis). In operating always explore the ureter by means of a catheter passed into the bladder. If very little kidney substance is left, the tumor large, the obstruction not relievable, and the other kidney functionally active (see Urinalysis), perform nephrectomy.

As a palliative measure in bilateral cases with anuria, and in cases with severe pressure symptoms, aspirate the kidney just below the last intercostal space on the left side, and midway between the last rib and the crest of the ilium on the right side.

Hyperæsthesia Vesicæ.—Gr. *ὑπέρ* over + *αἴσθησις* sensibility; L. *vesi'ca*, bladder. See Bladder Irritability.

Hypernephroma.—Gr. *ὑπέρ* over + *νεφρός* kidney + *-ωμα* tumor. See Tumors of the Kidney.

Hypertrophy of the Prostate.—See Prostatic Hypertrophy.

Idiopathic Nephralgia; Idiopathic Renal Hæmaturia.—Gr. *ἴδιος* own + *πάθος* disease; *νεφρός* kidney + *ἄλγος* pain; L. *ren*, kidney. See under Hæmaturia.

Impotence.—L. *in*, not + *potentia*, power. Lack of reproductive power; lack of virility (L. *vir*, man).

Etiology (Casper).—I. Psychical Impotence (the most important form).

(a) Congenital deficiency or absence of the sexual impulse.

(b) Acquired deficiency or absence of the sexual impulse, due to mental work or diversion; distrust, fear, anxiety, or disgust in the performance of copulation; superstition; hypochondriasis; perverse sexual feeling. A man may be relatively impotent, that is, unable to have intercourse with his wife, but potent with other women.

II. Nervous Impotence.—General nervousness or irritable weakness may be the fault. Premature ejaculation may occur. It is commonest in "young men who have indulged in sexual intercourse very rarely or not at all" (Casper).

III. Paralytic Impotence.—In this form of impotence, erection does not occur at all (true paralytic impotence), or is deficient (atonic impotence; curable by "proper treatment and rest").

Causes.—Excessive venery; masturbation; anæmia; obesity; hypopituitarism; diabetes mellitus; exhausting diseases; diphtheria; brain and spinal cord affections, particularly tabes; certain drugs, viz. alcohol in excess, tobacco, morphine, cannabis indica, chloral, cocaine, bromine, iodine, lead, antimony, arsenic, carbon bisulphide, potassium nitrate, salicylic acid, camphor, conium.

IV. Organic Impotence.—See Sterility.

Treatment.—Examine the patient carefully, and attend to any possible causal influence. Dispel his fears and anxiety, and increase his stamina by insistence upon the following hygienic regimen, viz., abstention from sexual indulgence for months; adequate rest and exercise; regulation of the bowels; fresh air day and night; a daily morning tepid bath, before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel; regular hours of eating and sleeping; rest before and after eating; a light but nutritious, bland or non-stimulating diet, excluding alcohol, tea, coffee, ginger ale, carbonated beverages, lemonade, acid fruits, sour foods, pickles, sauces, salads, spices, condiments, mustard, pepper, horseradish, radishes, tomatoes, asparagus, salty foods, smoked and salted meats, preserved fish, herring, shellfish, greasy or fried foods, fat, tobacco. No food should be taken for four hours before bedtime. The patient should sleep upon a hard mattress, with light covering, and should avoid sleeping upon his back, to prevent which a towel may be fastened around the waist and knotted in the back. Distention of the bladder and constipation are to be avoided. The patient should engage in some form of occupation, such as gardening. A hunting or fishing trip, rowing, bathing, swimming, walking, or gymnastic exercises may be prescribed, but too much exercise should be avoided. Massage is beneficial. Natural or artificial brine baths are good. Carbonic acid or Nauheim baths (see Part 11) are very stimulating, and should not be used by those who have indulged in excessive venery. They are indicated in nervous impotence. Protracted warm baths are contraindicated.

Electricity is of value. The constant or Galvanic current is best for paralytic impotence, the induction or Faradic current for psychical and nervous impotence. The current should produce sharp tingling, and should be applied especially to the spinal column, penis, testicles and perineum. Very weak currents, however, should be used for the testicles. One electrode may be placed on one side of the vertebral column, while the other electrode is moved up and down on the other side of the spinous processes, and vice versa; or one electrode may be placed over the sacrum and the other over the perineum, employing not so strong a current, and applying it but one to two minutes. Then one electrode may be placed on the perineum and the other run along the anterior and posterior surfaces of the penis. "Very gratifying results" are obtained by a sponge over the perineum or spinal column, and a metal brush attached to an induction apparatus, used upon the penis, the current being increased until slight smarting is produced, and then continued for two minutes; this repeated every three days. Franklinization may be employed. "The patient sits upon an insulated plate, being stripped down to the thighs, and by means of a copper sphere sparks are carried along the entire length of the spine." The negative pole of a galvanic battery within the prostatic urethra and the other over the perineum, with a current no greater than five milliampères, is recommended for frequent seminal losses. (After Casper).

Occasional cauterization (once every week or two) of the verumontanum with silver nitrate, 1 to 10 to 20 per cent., is useful for the purpose of reducing congestion and obtunding its sensibility, especially in cases of deficient erection, premature ejaculation, prostatorrhœa, and nocturnal emissions, in which dilated vesicles and prostate should also be massaged every four to seven days.

The cauterization may be accomplished by means of Guyon's or Ultzmann's syringe, which is inserted until the membranous urethra is passed, as ascertained by feeling the resistance subside or by rectal examination. Then one drop of the silver solution is injected, the bougie pushed a little farther and another drop injected, and so on up to the internal sphincter of the bladder; or one may begin at the bladder (Casper). Says Keyes: "If some benefit is not derived from the first two or three applications, it should not be continued." Cold or hot lavage through a double catheter or psychrophore (Gr. ψυχρός cold + φορεῖν to bear) is beneficial; also the passage of metal sounds of increasing sizes every three or four days for five minutes at a time.

APHRODISIAC DRUGS:

1. Phosphorus (said to be the best; it increases desire).

℞ Olei phosphorati (1 per cent.), ℥ss (gr. 1/101 to each minim.)
Sig.—One minim, gradually increased to three or four minims, t.i.d.

℞ Zinci phosphidi..... gr. 1/2
Fiat pillula. Mitte talis No. 100.
Sig.—One pill three or four times a day.

℞ Acidi hypophosphorici diluti..... ℥i
Sig. Twenty drops in water, t.i.d.

2. Strychnine.

℞ Strychninæ sulphatis..... gr. 1/3
Acidi hypophosphorici diluti..... ℥iv
M. Sig.—Ten drops in water, t.i.d., gradually increased to twenty-five drops.

℞ Strychninæ, gr. ⅓₀, aa tabellas No. 40.
Sig.—One tablet t.i.d. (see Part 11, Drugs, for toxic signs).

℞ Tincturæ nucis vomicæ..... ℥i
Sig.—Ten to fifteen minims, in water, t.i.d.

3. Atropine.

℞ Atropinæ sulphatis, gr. ¹⁄₂₅₀–¹⁄₁₂₀, aa tabellas No. 30.
Sig.—One tablet two or three times a day (see Part 11, Drugs, for toxic signs).

4. Ergot.

℞ Fluidextracti ergotæ..... ℥i
Sig.—Thirty drops in water, t.i.d.

5. Cantharidis, Tincturæ..... ℥ss
Sig.—Three to eight drops, t.i.d. (see Part 11 for injurious effects; it produces erection without desire).

6. Oxygen inhalations: ten litres at each sitting.

The above drugs should not be given until after the normal sexual function has been restored by functional rest (for a period of months), a hygienic-dietetic regimen, and tonics, such as the elixir of iron, quinine, and strychnine (*q.v.*). Remember hypopituitarism (*q.v.*, in Part 1) as a possible cause of impotency and obesity.

Nervous impotence is cured by marriage.

In some instances of perverse sexuality, sexual desire is evoked only by the contemplation or conception of certain inanimate objects, such as a night-cap, stocking, etc. Such cases may be treated successfully by having the patient use such object during coitus. (Casper.)

Incontinence of Urine.—See Enuresis.

Infiltration of Urine.—L. *in*, into + *fil'trum*, filter. See Extravasation of Urine.

Inflammation of the Bladder.—L. *inflamma're*, to set on fire. See Cystitis.

Inflammation of Cowper's Glands.—See Cowperitis.

Inflammation of the Epididymis.—See Orchitis and Epididymitis.

Inflammation of the Foreskin.—See Balanoposthitis.

Inflammation of the Glans Penis.—L. *glans*, gland. See Balanoposthitis.

Inflammation of the Inguinal Glands.—See Lymphadenitis, Inguinal.

Inflammation of the Kidney.—See Pyelonephritis, in Part 1, General Medicine and Surgery.

Inflammation of the Penis.—L. *pe'nis.*

Causes.—Gonorrhœa, chancroid; syphilis; herpes; tuberculosis; erysipelas; malignant ulceration; balanoposthitis; urethritis; urethral stricture; gout or rheumatism; typhoid fever; traumatism, etc.

Treatment.—Attend to the cause. Prescribe rest, laxatives, and light diet, and frequent prolonged immersion of the penis in hot bichloride solution, 1 : 10,000 to 2000, followed by a dressing of gauze wet with aluminum acetate solution, 2 per cent., or ichthyol, 50 per cent. in glycerine and water, the latter especially for erysipelas. Open and drain abscesses, and remove sloughs. Incise tense areas to avert gangrene. Keep the penis and testicles elevated. If a sexual sedative is required, prescribe bromides, camphor, or morphine (see Part 11).

Correct later any resulting phimosis or paraphimosis.

Inflammation of the Perinephric Tissues.—See Perinephric Abscess.

Inflammation of the Prepuce.—L. *præp'utium*, foreskin. See Balanoposthitis.

Inflammation of the Prostate.—See Prostatitis.

Inflammation of the Scrotum.—L. *Scro'tum*, bag.

Causes.—Traumatism; furunculosis; erysipelas; chancre; mycosis; infectious diseases (diphtheria, scarlet fever, typhoid fever, etc.); urinary infiltration; poison-ivy or poison oak; irritation from carbolic or bichloride dressings.

Gangrene is a complication to be feared.

Treatment.—Prescribe rest in bed, laxatives, light diet, and frequent prolonged immersion of the parts in hot boric acid solution, ℥iv ad Oi, followed by moist boric acid dressings. Keep the scrotum elevated. Open and drain abscesses, and remove sloughs. In tense areas, make multiple free incisions, parallel with the raphe, to prevent gangrene.

Inflammation of the Seminal Vesicles.—See Seminal Vesiculitis.

Inflammation of the Testis.—L. *te'stis*, *testicle*. See Orchitis.

Inflammation of the Urethra.—See Urethritis; and Gonorrhœa.

Inguinal Lymphadenitis.—See Lymphadenitis, Inguinal.

Injuries of the Bladder.—See Bladder Injuries.

Kidney.—See Kidney Injuries.

Penis.—For contusion, apply heat or cloths wet with aluminum acetate solution, 2 per cent., or boric acid solution, 4 per cent. Large blood-clots should be incised and evacuated. Tense œdematous areas should be incised in several places to avert gangrene.

Wounds should be cleansed and sutured. Perform external perineal urethrotomy if the urethra is injured (see Injuries of the Urethra).

For fracture, prescribe rest, laxatives, light diet, elevation of the penis, cold appli-

cations, and bromides in large doses, with perhaps camphor, or morphine (Part 11), to prevent priapism. In severe cases, make an incision down to the seat of injury, remove clots, approximate the deep structures with buried catgut and the skin with interrupted silkworm-gut sutures, and apply moist antiseptic dressings, *e.g.*, bichloride, 1:4000. Perform external perineal urethrotomy if the urethra is injured.

It is advised that a silver retention catheter (see under Bladder Diverticula) be tied in place in every case of severe injury, since retention from swelling may occur.

Injuries of the Testicle.—L. *tes'tis*; *testic'ulus*. For contusion, prescribe rest in bed, laxatives, elevation of the penis and testicles, and application of boric acid, 4 per cent., or aluminum acetate, 3 per cent. Do not apply pressure bandages,for fear of gangrene. Should inflammation threaten, make free incisions and evacuate effused blood. Should gangrene of the testicle occur, as manifested by local swelling and violent constitutional disturbance, remove the gland at once.

Dislocation of the testicle should be reduced by pressure or traction or operative means, to forestall gangrene.

Torsion of the spermatic cord produces gangrene of the testicle, with symptoms resembling strangulated hernia. If the testicle can not be untwisted, operate.

Open wounds should be cleansed, hernia of the testicular contents should be reduced, and the tunica albuginea sutured or pressure applied.

Injuries of the Urethra.—Gr. *οὐρήθρα*. For simple contusion, prescribe rest in bed, laxatives, a light bland diet, sodium bromide (*q.v.*) for the prevention of priapism, and a cooling sedative lotion, such as aluminum acetate, 2 to 3 per cent. solution. Urotropine (*q.v.*) may be administered, and, if deemed advisable, bidaily gentle injections or irrigations of boric acid solution, ʒi–iv ad Oi; or potassium permanganate, 1 : 4000; or protargol, 1 : 1000 (3 to 5 c.c.); or silver nitrate, 1 : 2000 (3 to 5 c.c.). Do not employ the catheter.

For wounds, prescribe sodium bromide, irrigate with boric acid or permanganate solution, approximate with fine interrupted catgut sutures (not penetrating the mucous coat) any wounds communicating with the exterior, and keep in a catheter until union occurs (see under Bladder Diverticula), or in slight cases, catheterize carefully, at each urination, for several days.

Retention follows severe injuries:—Perform external urethrotomy at once, suture the divided ends of the urethra, and keep in a catheter until healing occurs.

Should extravasation of urine occur perform immediate external perineal urethrotomy and establish drainage (see Extravasation of Urine).

Casper says: "Large doses of quinine, gr. xv–xxx a day, should always be administered in every injury of the urethra."

Intractable stricture is prone to follow urethral injuries in about six weeks.

Intertrigo; Chafing.—L. *ĭnter*, between + *ter'ere*, to rub. (See Part 5, Skin Diseases.)

Inunction, Mercurial.—L. *in*, into + *ung'uere*, to anoint. (See under Syphilis, in Part 1).

Irritable Bladder.—See Bladder Irritability.

Irritable Testicle.—See Neuralgia of the Testicle.

Itching.—See Pruritus.

Kidney Abscess.—L. *absce'ssus*, a going apart. See Pyelonephritis, in Part 1, General Medicine and Surgery.

Kidney, Angioneurosis of the.—Gr. *ἀγγεῖον* vessel + *νεῦρον* nerve. See under Hæmaturia.

Kidney Calculus.—L. *calculus*, pebble. See Nephrolithiasis, in Part 1, General Medicine and Surgery.

Kidney, Carcinoma of the.—Gr. *καρκίνος* crab + *-ωμα* tumor. See Tumors of the Kidney.

Cysts of the.—Gr. *κύστις* bag. See Tumors of the Kidney.

Echinococcus Disease of the.—Gr. *ἐχῖνος* hedge-hog + *κύκκος* berry. See Tumors of the Kidney.

Kidney Fistula.—See Fistula, Renal.

Kidney, Floating.—See Splanchnoptosis, in Part 1, General Medicine and Surgery.

Kidney Hemorrhage.—Gr. *αἷμα* blood + *ῥεγνύναι* to burst forth. See Hæmaturia.

Kidney, Hydatid Disease of the.—Gr. *ὑδατίς* vesicle. See Tumors of the Kidney.

Hypernephroma of the.—Gr. *ὑπέρ* over + *νεφρός* kidney + *-ωμα* tumor. See Tumors of the Kidney.

Kidney Infections.—L. *infectio*. See Pyelonephritis, in Part 1, General Medicine and Surgery.

Kidney, Injuries of the.—See Gynæcology, Part 2.

Movable.—See Splanchnoptosis, in Part 1.

Neuralgia of the.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See under Hæmaturia.

Polycystic.—Gr. *πολύς* many + *κύστις* cyst. See Tumors of the Kidney.

Kidney, Sarcoma of the.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Kidney.

Stone in the.—See Nephrolithiasis, in Part 1.

Kidney Suppuration.—L. *sub*, under + *pus, pur'is*, pus. See Pyelonephritis, in Part 1.

Kidney, Suprarenal Inclusion Tumor of the.—See Tumors of the Kidney.

Tuberculosis of the.—See Pyelonephritis, in Part 1.

Kidney Tumors.—See Tumors of the Kidney.

Litholapaxy.—Gr. *λίθος* stone + *λάπαξις* removal. See Bladder Calculus.

Loss of Semen, Abnormal.—L. *sémen*, seed; *ab*, from + *nor'ma*, rule. See Sexual Neuroses.

Lubricants, Urethral.—See under Stricture of the Urethra.

Lues.—L. See Syphilis, in Part 1.

Lymphadenitis, Inguinal.—L. *lym'pha*, lymph + Gr. *ἀδήν* gland + *-ιτις* inflammation; L. *in'guen*, groin.

Causes.—Urethritis; balanoposthitis; gonorrhœa; chancroid (*q.v.*); chancre; infected excoriations; eczema; herpes; tuberculosis; acute infectious diseases; secondary syphilis; etc.

Treatment.—This depends upon the cause (*q.v.*). Where suppuration threatens, employ rest in bed, laxatives, cold applications of aluminum acetate solution, and nightly application of unguentum hydrargyri (Part 11).

For chronically enlarged glands, employ inunctions of unguentum iodi, or paint on tincture of iodine.

Lymph Scrotum.—See Elephantiasis of the Scrotum.

Masturbation.—L. *mańus*, hand + *stupra're*, to rape.

Etiology.—Neurotic habit; habit of sucking; tight clothing; uncleanliness; adherent prepuce; elongated foreskin; phimosis; balanoposthitis; eczema; pin-worms; highly acid, concentrated, or diabetic urine; anal fissure; chronic constipation.

Treatment.—Remedy all possible causal influences. Strip the prepuce, apply a solution of cocaine, 10 to 20 per cent., for ten minutes, if necessary, and free adhesions with a blunt probe back to the sulcus in back of the corona; cleanse the preputial sac, and apply vaseline every day for two weeks. Build up the general health. Enjoin cleanliness, local and spinal cold water sprays or douches, a hard bed, light bedcovering, prompt rising in the morning, physical work and fresh air exercise. Prohibit tea, coffee, alcohol, spices, highly-seasoned food, sweets, and highly nitrogenous food. Allow no food within three or four hours of bedtime. If hyperacidity of the urine seems to be a factor, prescribe sodium bicarbonate or potassium citrate (Part 11) and restrict the eating of meat.

The wrists may be tied to the neck. In leg-rubbing in infants, keep the legs apart with a large coarse napkin, or a towel over the napkin. In older children employ the knee-crutch.

Close and persistent supervision is required to effect a cure.

Meatotomy.—L. *mea'tus*, passage + Gr. *τέμνειν* to cut. See under Stricture of the Urethra.

Micturition.—L. *micturir're*, to urinate. See Urination.

Misplaced Testicle.—See Undescended Testicle.

Moist Warts.—See Verrucæ.

Mouth, Gonorrhœa of the.—See Buccal Gonorrhœa, under Genorrhœa.

Movable Kidney.—See Splanchnoptosis, in Part 1.

Mumps, Orchitis of.—See Orchitis.

Neck of the Bladder, Contracture of the.—L. *con*, together + *tra'here*, to draw See Bladder Irritability.

Spasm of the.—Gr. *σπασμός*. See Bladder Irritability.

Stricture of the.—See Stricture of the Neck of the Bladder.

Nephralgia.—Gr. *νεφρός* kidney + *ἄλγος* pain. See under Hæmaturia.

Nephritis, Suppurative.—Gr. *νεφρός* kidney + *-ιτις* inflammation; L. *sub*, under + *pus, pur'is*, pus. See Pyelonephritis, in Part 1.

Nephrolithiasis.—See Part 1, General Medicine and Surgery.

Nephroptosis.—Gr. *νεφρός* kidney + *πτῶσις* falling. See Splanchnoptosis, in Part 1.

Neuralgia of the Bladder.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See Bladder Irritability.

Neuralgia of the Kidney.—See under Hæmaturia.

Neuralgia of the Penis.—Correct any discoverable fault, local or constitutional. The gouty diathesis may be causative (see Gout in Part 1, General Medicine and Surgery) Enjoin the observance of correct hygiene, general and sexual, *e.g.*, adequate rest and exercise, fresh air day and night, a daily morning warm or tepid bath in a warm room, before breakfast, followed by a cold spinal douche, regulation of the bowels, simple bland diet, plenty of water between meals, regular hours of eating and sleeping, rest before and after meals, abstention from

poisons, such as tea, coffee, alcohol, and tobacco.

Neuralgia of the Testicle; Irritable Testicle.—L. *irritar'e*, to tease; *test'is*, *testic'ulus*.

Etiology.—Neurotic disposition; excessive venery, psychical or physical; prolonged ungratified sexual desire; varicocele; congestion of the verumontanum; prostatitis; vesiculitis; renal or vesical calculus.

Treatment.—Attend to the cause. Enjoin the observance of correct general and sexual hygiene, *e.g.*, adequate rest and exercise, regular hours of eating and sleeping, rest before and after eating, a simple bland diet, regulation of the bowels, fresh air day and night, a daily tepid bath in a warm room, before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel. A suspensory bag should be worn, and guaiacol, 10 per cent. in glycerine, may be applied. The ice-bag may be of service.

Cauterization of the verumontanum, rectal douching, and massage of the vesicles and prostate may be indicated (see under Impotence). Marriage may be curative.

Neurasthenia, Sexual.—Gr. *νεῦρον* nerve + *ἀσθένεια* debility. See Sexual Neuroses.

Neuroses of the Bladder.—Gr. *νεῦρον* nerve. See Bladder Irritability.

Neuroses of the Prostate.—Gr. *νεῦρον* nerve; *προ-* before + *ἱστάναι* to stand. Most, but not all, of the cases follow chronic gonorrhœa. There may be constant pain and heaviness with exacerbations, but there are no objective signs of inflammation, no swelling, although tenderness may be present, no pus cells in the prostatic secretion, and the urine is clear, except perhaps for the presence of a few filaments from a previous catarrh. Micturition and the passage of instruments may be painful. Difficulty of urination is most frequent, but it is inconstant, "being present at one time and absent at another." Catheterization with metallic instruments is easy, and the urethra is not lengthened as in prostatic hypertrophy; moreover, the condition occurs mostly in young men. Urgency of micturition is of inconstant occurrence; "it is never present at night." (Casper.)

Treatment.—Employ prostatic massage, cauterization of the prostatic urethra, irrigations, and sounds, as in chronic prostatitis (*q.v.*); but discontinue the treatment if it causes pain. Faradization or galvanization of the prostate and bladder, one electrode in the rectum and the other over the symphysis, very hot or cold lavage through a double catheter or psychrophore (Gr. *ψυχρός* cold + *φορεῖν* to bear), Casper's rectal thermophore (Gr. *θέρμη* heat), sitz-baths, and cold perineal douches are useful. For vesical spasm, introduce a large sound and keep it in for about five minutes, and administer belladonna (Part 11).

An invigorating hygienic regimen should be enforced, viz., adequate rest and open air exercise, fresh air day and night, tepid or cold tub baths and cold spinal douches with brisk rubbing, general massage, vibratory and manual, regular hours, simple bland diet, rest before and after meals, regulation of the bowels. Sanatorium life is to be preferred.

Neuroses, Sexual.—See Sexual Neuroses.

Nocturnal Pollutions.—L. *nox*, night; *pollut'io*, defiling. See Sexual Neuroses.

Ophthalmia, Gonorrhœal.—Consult Part 6, on Eye Diseases.

Orchitis and Epididymitis.—Gr. *ὄρχις* testis; *ἐπί-* on + *δίδυμος testis;* + *-ιτις* inflammation. There are the local signs and symptoms of inflammation. Atrophy of the testicle may follow orchitis. Sterility, due to occlusion of the epididymis, may follow epididymitis.

I. **Acute Inflammation.**—**Etiology.**—Urethritis, usually gonorrhœal; traumatism; cold and wet; prostatitis; vesiculitis; prolonged sexual excitement; gout; infectious diseases: mumps, typhoid fever, influenza, smallpox, rheumatic fever, pneumonia, malaria, appendicitis, tonsillitis, pyæmia.

Treatment.—Put the patient to bed, open the bowels, and prescribe a light, bland diet. Elevate the testicles by means of a broad band of adhesive plaster spanning the thighs, or by means of a square piece of cloth folded in a triangle, to the centre of the base of which is fastened the middle of a piece of tape; the base of the triangle is placed beneath the scrotum and the acute angle pinned to a waistband in front, while the two tapes are carried around the folds of the nates and fastened to the waistband in back. Hot flaxseed poultices or ice-cold acetate of aluminum solution, 2 per cent., may be applied every two hours, or for two hours in the forenoon and two hours in the afternoon. Some apply guaiacol, 50 per cent. in glycerine, or guaiacol, gtt. xx, in alboline or olive oil, ʒi, twice daily for about a week. For the relief of pain in the acute stage, one may administer tincture of aconite, ♏i–ii, in water, every hour (praised by Keyes); or salicylic acid, gr. x, well diluted, twice daily, or antipyrine, gr. xv in twenty-four hours (Casper). Anti-gonococcus vaccine or serum may be tried (see under Gonorrhœa).

Keep the patient in bed for two or three days after the temperature has returned to normal, and have him wear a suspensory bag until completely cured. After the acute symptoms have subsided, Martin's epididymitis bag, made by Lentz and Sons, of Philadelphia, may be worn, both to suspend the parts and to exert slight compression. The skin should be lightly anointed with lanolin and the bag lined with soft cotton.

For persistent induration and swelling, the indurated parts may be strapped with overlying strips of adhesive plaster every two days, after shaving the scrotum; or Chetwood's rubber bandage may be employed as follows:

First encircle the base of the scrotum of the affected side rather snugly with a piece of tape. Then take a rectangular strip of light rubber (Martin) bandage, 10 cm. wide and about 20cm. long, and wrap it around the inflamed testicle as snugly as the patient can bear it, and retain it in place with an overlying strip of adhesive plaster. Remove the bandage daily and reapply it more snugly. To promote absorption, potassium iodide may be administered internally, together with external applications of unguentum iodi, or tincture of iodine, or oleate of mercury, or unguentum ichthyolis, 20 per cent., continued for months (see Drugs, Part 11).

In the presence of suppuration, and in stubborn recurring cases, one may make an incision, under general anæsthesia, two to three inches long, on the outer side of the scrotum at about the junction of the epididymis with the testicle, opening the tunica vaginalis and evacuating contained fluid. The red swollen epididymis which presents may then be punctured in places to see if it contains pus (Hagner). The wound is washed out with salt solution (℥i ad Oi) and packed lightly with gauze.

McDonagh advocates early operative interference in acute epididymitis. He takes the scrotum in one hand and makes tense the skin over the epididymis. A scalpel is then plunged into the substance of the epididymis in its long axis in two or three places, or 1 to 2 c.c. of electrargol is injected. Rapid relief and cure, he says, usually follow one of these procedures.

Crosbie and Riley report excellent results from epididymotomy in acute gonorrhœal epididymitis. Local anæsthesia is accomplished as follows, using 20 to 30 c.c. of a 1 per cent. solution of novocaine containing 3 to 6 drops of adrenalin, 1: 1000, and preferably a 10 c.c. glass syringe with a two-inch needle. The cord is grasped, at the point where it emerges from the external ring, between the thumb and forefinger of the left hand, the needle is inserted into the cord, and 5 to 10 c.c. of the solution injected in all directions, not neglecting the inguinal canal surrounding the cord, in order to block completely all the nerves in the cord. "The needle is then pushed downward through the same point of entry, along the cord, to the region of the globus major, and a little more solution injected." The scrotum is then circuminjected where the scrotal skin merges with the skin of the thigh, all the way to the perineum, or according to Braun, all the way around, as for a double operation. Finally, the line of incision is injected. "In order to get perfect anæsthesia, it is well to wait ten or fifteen minutes." A lateral incision is made, opening the tunica vaginalis near the epididymis, taking care, in advanced cases in which adhesions have formed between the tunica vaginalis and tunica albuginea, not to cut into the testicle. Adhesions are freed and the testicle and epididymis delivered through the incision. The lower pole or globus minor is usually most inflamed. Multiple punctures with a tenotome are then made in all parts of the epididymis that show induration, whether pus is evident or not, the tenotome being plunged deeply into the substance of the organ. Where pus is found, the opening is enlarged for drainage. Bleeding vessels are ligated by means of a fine catgut stitch. The parts are washed with warm saline solution, a rubber or gauze drain placed lengthwise along the epididymis and brought out at the lower end of the incision, the testicle pushed back into the tunica, and the wound closed loosely with silkworm-gut sutures passed through all the layers. A large dressing is applied and held in place with a T-bandage, and a cathartic is given. The drain is removed on the third or fourth day, and the stitches in about a week.

Do not employ local urethral treatment for two weeks or longer after the epididymis has healed.

In acute orchitis (of mumps, etc.) with very acute symptoms, or with symptoms of threatening gangrene, Keyes advises that the tunica albuginea be incised subcutaneously with a sharp tenotomy knife, "three to six short cuts 5 to 10 c.m. long being made at different points," to relieve tension. Gangrene, manifested by violent constitutional disturbance, requires castration.

II.—Chronic Inflammation. ETIOLOGY.—Acute inflammation (*q.v.*, above); tuberculosis; syphilis. Tuberculosis nearly always begins

in the epididymis, whereas syphilis nearly always affects the testis instead of the epididymis. Tumor should be excluded. Primary tuberculosis may heal spontaneously or be entirely cured by operation.

Treatment.—(a) *Simple Chronic Inflammation.*—Employ the suspensory bag, ichthyol, iodine, or mercury ointment, potassium iodide by mouth, compression, or operative treatment, as described above.

(b) *Tuberculosis.*—Prescribe a reconstructive hygienic regimen, rest, fresh air, an abundant diet, and tonics, etc., as described in detail under Tuberculosis, Pulmonary, in Part 1, General Medicine and Surgery.

Support the testicles by means of a suspensory bag. Bier's hyperæmia may be tried for two or three hours or longer every day. If the condition grows worse in spite of good hygiene, lay open and thoroughly curette suppurating foci, employ Bier's cups, and apply iodine or iodoform. Do not tap small hydroceles; but large ones may be tapped and carbolic acid injected as described under Hydrocele.

If the epididymis is extensively diseased, it should be removed, together with the greater part of the vas deferens, and the contiguously involved testicle cauterized with the actual cautery, or removed if deemed advisable. Keyes says: "I believe that the removal of one testicle tends, if anything, to encourage recurrence on the opposite side."

(c) Syphilis.—Treat with mercury, potassium iodide, and salvarsan, as described under Syphilis, in Part 1.

Papilloma of the Bladder.—L. *papil'la* + Gr. *-ωμα* tumor. See Tumors of the Bladder.

Penis.—L. *peńis.* See Verrucæ.

Urethra.—See Tumors of the Urethra.

Paralysis and Paresis of the Bladder.—Gr. *παρά* beside + *λύειν* to loosen; *πάρεσις* relaxation. Paralysis of the detrusor musculature with unimpaired tonicity of the sphincter causes complete retention of urine. Paralysis of the sphincter causes incontinence or overflow, the urine lying below the level of the sphincter being retained (incomplete retention). Simple muscular atony is characterized by a frequent desire but weakened power to urinate, and increased capaciousness of the bladder, as shown by percussion, catheterization, and the passage during urination of an abnormal amount of urine.

Etiology.—Overdistention of the bladder (see Retention of Urine); injury of the bladder; arteriosclerosis of the vesical vessels; severe parenchymatous cystitis leading to sclerosis; comatose states; shock; operations; fevers; cerebral or spinal disease or injury, *e.g.*, general paresis, tabes, fracture of the vertebral column, compression of the cord by hemorrhage or exudate, myelitis, disseminated sclerosis, hemiplegia, hysteria, etc.

"The prognosis is by no means bad in all cases," says Casper. The condition predisposes to cystitis and stone.

Treatment.—Attend to the cause. Unless cystitis is present, manual expression of the urine should be practiced every six hours, by means of the fingers of both hands grasping the bladder from above, and the thumbs resting on the symphisis pubis, the fingers being pressed downward and inward (Ortner). If manual expression is unsuccessful, catheterize the bladder regularly, twice or thrice daily, and guard against infection by an occasional irrigation with hot boric acid solution, ʒi–iv ad Oi, or silver nitrate, 1 : 5000 to 1000, and perhaps urotropine (*q.v.*) by mouth. To restore muscular tone, employ abdominal and spinal massage, vibratory and manual; galvanization or faradization of the bladder, with one electrode over the bladder, and the other (a metal sound covered with the exception of the tip with hard rubber) within the bladder or rectum; and strychnine in large doses, and perhaps ergot (Part 11).

In organic nervous cases, such as tabes, etc., the regular passage of full-sized dilators is recommended.

Paraphimosis.—Gr. *παρά* amiss + *φιμόειν* to muzzle. Tight retraction of the prepuce behind the corona glandis.

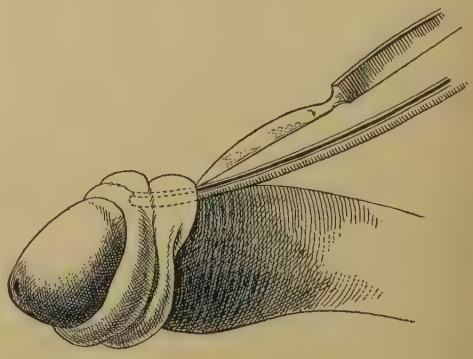


Fig. 89.

Etiology.—Voluntary retraction of a tight prepuce; inflammation: balanoposthitis, gonorrhœa, herpes, verrucæ, chancre, chancroid, etc.; circumcision with but little of the foreskin removed.

Treatment.—Retract the prepuce further, and squeeze the œdema back into the shaft of the penis; skin punctures may be made.

The penis should be grasped behind the stricture between the index and middle fingers of both hands, and the thumbs, one on each side of the glans, made to compress the glans laterally, not from before backward, while the stricture is at the same time pulled over the glans (not the glans pushed back through the stricture).

If attempts at manipulative reduction fail, divide the constricting ring on the dorsum in the median line (see Fig. 89.)

If necrosis has occurred, do nothing but keep the parts clean by means of antiseptic lotions, such as boric acid solution, 4 per cent., or bichloride, 1 : 4000, dried, and powdered with boric acid and zinc oxide, equal parts, until nature has effected a cure.

Parasites, Vesical.—Gr. *παρά* near + *σιτός* food; L. *vesica*, bladder. See Cystitis.

Paresis of the Bladder.—See Paralysis and Paresis of the Bladder.

Pediculosis Pubis.—See Part 5, Skin Diseases.

Penis, Gangrene of the.—See Gangrene of the Penis.

Horns of the.—See Tumors of the Penis.

Inflammation of the.—See Inflammation of the Penis.

Injuries of the.—See Injuries of the Penis.

Neuralgia of the.—See Neuralgia of the Penis.

Papilloma of the.—L. *papil'la* + Gr. *-ωμα* tumor. See Verrucæ.

Sarcoma of the.—Gr. *σάρξ*, *σαρκός* flesh + *-ωμα* tumor. See Tumors of the Penis.

Tumors of the.—See Tumors of the Penis.

Penitis.—L. *peñis* + Gr. *-ιτις* inflammation. See Inflammation of the Penis.

Perinephric Abscess.—See Part 2, Gynæcology.

Periurethral Abscess.—Gr. *περί* around + *οὐρήθρα* urethra. See under Gonorrhœa; and Stricture of the Urethra.

Phimosis.—Gr. *φίμωσις* a muzzling.

Etiology.—Congential anomaly; balanoposthitis; traumatism. Phimosis, or tight application of the foreskin over the glans, may give rise to reflex nervous disturbances, retention of urine, urethritis, cystitis, pyelitis, hernia, prolapsus ani, enuresis, pruritus scroti, etc.

The Treatment is operative.

Pneumaturia.—See Part 1, General Medicine and Surgery.

Pollution.—L. *pollut'io.* See Sexual Neuroses.

Polycystic Kidney.—Gr. *πολύς* many + *κύστις* cyst. See Tumors of the Kidney.

Polyuria.—See Part 1, General Medicine and Surgery.

Posthitis.—See Balanoposthitis.

Premature Ejaculation.—L. *præmatur'us*, early ripe; *e*, out + *jaćere*, to throw. See Sexual Neuroses.

Prepuce, Inflammation of the.—L. *præpu'tium*, foreskin. See Balanoposthitis.

Priapism.—L. *priapiśmus*; Gr. *πριαπισμός*. Abnormal, persistent erection of the penis, usually without sexual desire.

Causes.—Certain injuries and diseases of the cerebellum and spinal cord; prolonged mental stress; cantharides; leukæmia; injuries to the penis; inflammation of the penis; urethritis; spermatocystitis; prostatic hypertrophy in the early stages; vesical calculus; rectal worms; adherent prepuce; etc.

Treatment.—Prescribe rest, purgation, counter-irritation to the lower spine and perineum (or electricity), bromides, morphine, chloral, belladonna, ergot or potassium iodide, and local applications of cold water or cold lead and opium wash (see Part 11 for all drugs).

Catheterize the bladder if retention of urine is present. Incise and evacuate blood clots, if causal.

In chronic cases, make an incision at the seat of pain, or in the most turgid portion, or where any nodular masses are present.

Proctitis, Gonorrhœal.—Gr. *πρωκτὸς* anus or rectum + *-ιτις* inflammation. See under Gonorrhœa.

Prostate, Abscess of the.—Gr. *προ* before + *ἱστάναι* to stand; L. *absceśsus*, a going apart. See Prostatitis.

Prostate, Atrophy of the.—See Atrophy of the Prostate.

Carcinoma of the.—Gr. *καρκίνος* crab + *-ωμα* tumor. See Tumors of the Prostate.

Prostate, Hypertrophy of the.—Gr. *ὑπέρ* over + *τροφή* nutrition.

Symptomatology.—Nocturnal frequency of urination and difficulty of urination after the age of fifty years; dribbling from overflow (paradoxical incontinence); bladder irritability; true incontinence very rarely; sometimes temporary complete retention due to congestion (the result of overeating, constipation, alcohol, exposure, etc.); eventually the stage requiring systematic catheterization, when cystitis and stone are prone to occur.

Examination reveals an enlarged prostate

(sometimes only evident on cystoscopic examination), the presence of residual urine, a lengthened urethra (normal length = about eight inches), and perhaps a distended bladder, as shown by hypogastric palpation and percussion. A stony hardness of the prostate points to cancer (*q.v.*). If the bladder is found to contain more than one quart of urine, do not withdraw more at one sitting, for fear of collapse, but wait three to six hours before withdrawing the remainder. After exploring with the catheter, irrigate the bladder and urethra with warm silver nitrate solution, 1 : 8000, or potassium permanganate, 1 : 6000, give three 10-grain doses of urotropine at four-hour intervals, and have the patient rest, preferably in bed, for two days. Examine the urine for pus and evidences of pyelonephritis (*q.v.* in Part 1).

According to Keyes, retention of urine without obvious prostatic hypertrophy is due to one of three causes, viz. (1) a median prostatic bar, which calls for Chetwood's galvano-prostotomy, (2) paralysis of the bladder (*q.v.*), and (3) stricture at the neck of the bladder (*q.v.*), which also calls for Chetwood's galvano-prostotomy.

About 15 or 16 per cent. of old men suffer with hypertrophy of the prostate, although more have it. About 90 per cent. of prostatic enlargements are fibro-adenoma (hypertrophy); about 10 per cent., carcinoma. (Kidd.)

Treatment.—According to Casper, Keyes, and others, prostatectomy is best reserved for those cases in which catheter life becomes wretched, and in which there are frequent attacks of acute retention. Young and Kidd, however, advise early operation in all cases with symptoms.

Enjoin a simple, quiet life, adequate dry clothing, and light diet, excluding spices, condiments, salt in excess, acids, sauces, salads, radishes, rhubarb, asparagus, tomatoes, acid fruits, meats, cheese, greasy or fried foods, and too much alcohol, tea, or coffee. Plenty of water should be drunk—alkaline diuretic waters (potassium acetate or citrate, (*q.v.*) when symptomsof irritability (see Bladder Irritability) occur. Instruct the patient to avoid sexual excess, irregularities in eating and drinking, fatiguing exercise, protracted sitting, constipation, overdistention of the bladder, cold and damp. An occasional hot sitz-bath or hot enema at night adds to the patient's comfort. Vigorous prostatic massage, once or twice a week, is recommended, especially when the bladder is irritable. Kidd well recommends, for the amelioration of symptoms, urotropine, gr. iii, and acid sodium phosphate, gr. xx; also nux vomica and ergot. Ammonium chloride is also well recommended (for drugs, see Part 11).

When the residual urine reaches four ounces or over, systematic catheterization should be employed, once, twice, or thrice daily, or oftener, at regularly appointed hours—on retiring, on rising, etc. If the residual urine amounts to four ounces, use the catheter night and morning; if six ounces, catheterize every eight hours; if eight ounces, every six hours (J. W. White). The best catheter for patient and physician, says Young, is a Porgés coudé gum catheter, which can be boiled (Fig. 90), it may be strengthened with a whalebone. The best

Fig. 90.—Porgès coudè gum catheter.

catheter, says Kidd, is a No. 10, English scale, black or yellow gum-elastic, called "the Marshall," supplied by Bell and Croyden; it can be boiled. The following lubricant is recommended:

Glycerine	20 parts
Tragacanth	2 parts
Oxycyanide of mercury	¼ part
Sterilized distilled water	100 parts

"K–Y lubricant."

While the patient is using the catheter, he should take 10 to 20 grains of urotropine daily, and also daily intravesical irrigations of warm boric acid solution, one teaspoonful to the pint, until the first cystitis, which always appears in from one to eight weeks, has subsided, when the irrigations may be made less frequent, down to once weekly. Combat the acute cystitis with daily irrigations of silver nitrate, 1 : 8000, or potassium permanganate, 1 : 6000. The cystitis is ordinarily an acid cystitis. Ammoniacal cystitis suggests the presence of stone. If it can not be controlled, whether due to stone or not, prostatectomy should be done.

In sudden complete retention of urine, apply heat to the lower abdomen and perineum, give hot enemata, hot sitz-baths, and

morphine hypodermically, or a rectal injection of laudanum, 10 to 20 drops, with antipyrine, 7½ grains, or pyramidon, 5 grains. If these measures are unsuccessful, inject warm sterile oil into the urethra, and try to pass first a soft Nélaton catheter; if this fails, try a silk web catheter with Mercier's or Guyon's curve, or Guyon's mandarin coudé (Fig. 91), or the English semi-hard catheters, which after placing in hot water may be bent to any curve desired. If flexible catheters fail, try silver catheters with a large prostatic curve, even up to Brodie's curve. Before attemping to pass the metal instruments, it may be necessary to inject into the anterior and posterior urethra about 1½ drams of 2 per cent. cocaine solution with adrenalin, followed by sterile oil, the buttocks being elevated. Do not withdraw all the urine at once, for fear of shock; 20 ounces may be drawn off every four hours until the bladder is empty. When this is accomplished,

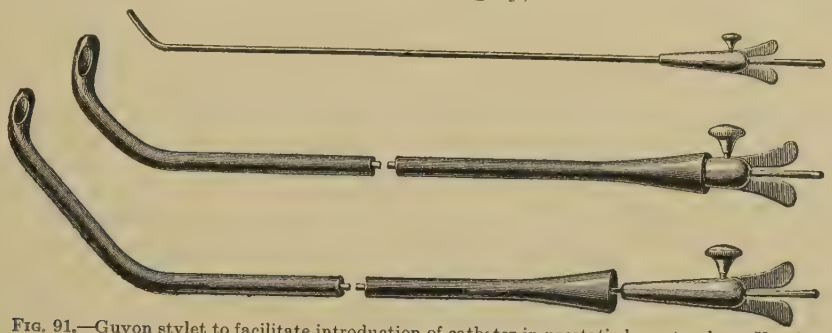


Fig. 91.—Guyon stylet to facilitate introduction of catheter in prostatic hypertrophy. Keen's *Surgery*. Courtesy, W. B. Saunders Co.

irrigate the bladder with warm boiled boric acid solution, ℥i ad Oi, and administer urotropine gr. x, t.i.d., for the first day.

If no catheter can be passed, aspirate the bladder suprapubically as often as necessary, or perform suprapubic cystotomy.

Casper treats cases of difficult catheterization in which cystitis is present by permanent catheterization. He uses his own self-retaining catheter closed with a cork, allowing it to remain in place for months or indefinitely, with the patient up and about. The bladder is irrigated once or twice daily, and the catheter is changed every one or two months. "At first a suppurative urethritis is produced, but it soon heals and the urethra becomes dry." "If the patient experiences much difficulty at first, he should be kept in bed and given morphine."

Suprapubic or perineal cystotomy is also done in such cases, to strengthen the patient for a subsequent prostatectomy.

Radical operative procedures are (1) the Bottini operation with Young's modification of Bottini's instrument, (2) suprapubic prostatectomy (best, say Casper, Keyes, and others), and (3) perineal prostatectomy (best, says Young).

Young and Frontz emphasize the great importance of a careful examination of each candidate for prostatectomy, and the employment of appropriate preliminary treatment to prepare the patient for operation. They employ a series of routine tests before operation:

1. Physical examination, including a blood-pressure reading (see Blood-Pressure, in Part I, General Medicine and Surgery).
2. Examination of the urinary system.
   (a) Residual urine.
   (b) General urinalysis (*q.v.* in Part 1).
   (c) Renal function, ascertained by means of the phenolsulphonephthalein test (see Urinalysis).
3. Presence or absence of acidosis (see Acidosis, in Part 1, General Medicine and Surgery).

"If the first phenolsulphonephthalein test is good, the amount of residual urine not great (say not over 200 c.c.), and the general condition good, operation is usually not delayed." "If the phenolsulphonephthalein test is poor (appearance time over fifteen minutes, excretion first hour under 30 per cent.), the patient is put on preliminary treatment," and semiweekly tests made until improvement becomes stationary.

The preliminary treatment in cases in which the kidneys have become impaired by long-standing back pressure is as follows:

(a) Catheterization, two to four to six times daily, according to the amount of residual urine (250 c.c. in the first instance to, say, over 400 c.c. in the second and third instances) and the degree of renal insufficiency. At each catheterization, the bladder should be irrigated or injected with 5 per cent argyrol. In the extreme cases of retention, a retained catheter may be preferable to frequent catheterization, especially if the latter is difficult or painful. The catheter

should be changed every one to three days, depending on infection and irritation, and the urethra should be injected with 5 per cent. argyrol and rested several hours before a new catheter is inserted. "A small soft rubber catheter is preferable to a gum coudé, but sometimes will not pass. The inlying catheter may be closed with a clip or cork and emptied at intervals, or allowed to drain in a bottle, the patient being up and outdoors if possible. In very acute urethritis and epididymitis a retained catheter should not be employed. Epididymotomy (see under Orchitis and Epididymitis) may be required, and intermittent catheterization until acute symptoms subside." Suprapubic drainage is rarely required.

(b) Six ounces of water every hour, usually three quarts daily. In uræmia, saline solution (0.8 per cent.) by infusion or per rectum, often several quarts daily, with, perhaps, in severe uræmia, simultaneous blood-letting.

(c) Hexamethylenamin, gr. xv, three or four times daily. If the urine is alkaline, render it acid by means of acid sodium phosphate, or sodium benzoate (Part 11) in large doses, given at different times from the hexamethylenamin.

(d) For acidosis, sodium bicarbonate, by mouth, rectum, or intravenously, until the urine is rendered alkaline, together with glucose or lactose and free catharsis (see Acidosis, in Part 1, General Medicine and Surgery).

(e) For cardiac impairment, if present, the establishment of full compensation by means of rest in bed, free bowel activity, digitalis, etc. (see Cardiac Insufficiency, in Part 1, General Medicine and Surgery).

In appropriate cases, X-ray (*q.v.*) or radium (*q.v.*) therapy may be of service in the treatment of prostatic hypertrophy. A pastille dose, through a 2 mm. filter, may be given perineally once a week, for three or four doses, and then the filter increased to 3 mm. and later 4 mm. or more. The suprapubic route should be substituted if the skin becomes affected, and a cylindrical compressor then employed.

Prostate, Inflammation of the.—L. *inflamma're*, to set on fire. See Prostatitis.

Neuroses of the.—See Neuroses of the Prostate.

Sarcoma of the.—Gr. σάρξ, σαρκός flesh + -ωμα tumor. See Tumors of the Prostate.

Tuberculosis of the.—See Tuberculosis of the Prostate.

Tumors of the.—See Tumors of the Prostate.

Prostatitis.—Gr. προστάτης, from πρό before + ἱστάναι to stand; -ῖτις inflammation.

Prostatitis is either acute or chronic, glandular (catarrhal) or parenchymatous (involving both glandular and interstitial tissue, with ultimate abscess formation).

Acute glandular or catarrhal prostatitis is usually gonorrhœal in origin, and is diagnosed by the association of symptoms of posterior urethritis (*q.v.*) with the presence of a swollen, tender prostate, which yields on massage a secretion containing pus cells (the urethra and bladder having been first irrigated).

In acute parenchymatous prostatitis, rectal examination reveals an enlarged, hot, sensitive prostate. Do not examine with urethral instruments.

Chronic prostatitis may follow the acute form, or the inflammation may be subacute or chronic from the beginning. The symptoms are many and various, *e.g.*, slight watery urethral discharge, sometimes hæmaturia, slight strangury, painful urination, pain upon defecation, pain in the back and legs, testicular pain, perineal discomfort, intermittent urgency and frequency of urination, hesitancy, dribbling, premature ejaculation, delayed ejaculation, painful ejaculation, nocturnal pollutions, loss of erection, loss of desire, sometimes pains simulating renal colic, vesical stone, sciatica, lumbago, neurasthenia, psychasthenia, etc. Chronic arthritis is a possible consequence. The diagnosis is made by the detection of pus cells and bacteria in the expressed secretion.

Etiology.—Posterior urethritis, gonorrhœal or non-gonorrhœal; traumatism (urethral instrumentation, falls, riding, bicycling, marching); vesical calculus; prostatic calculus; cystitis; prostatic hypertrophy; urethral stricture; pericystitis; proctitis; periproctitis; hemorrhoids; perirectal fistulæ; constipation; excessive purgation; infectious diseases (typhoid fever, typhus fever, pneumonia, parotitis, angina, the exanthemata, etc.); onanism; prolonged unsatisfied sexual desire; sedentary habits; the balsamics; cold; tuberculosis (*q.v.*).

Causal bacteria include the gonococcus, colon bacillus, staphylococci, streptococci, pneumococcus, anaërobes, and the tubercle bacillus (see Tuberculosis of the Prostate).

Treatment.—I. Acute Prostatitis.—Put the patient to bed on liquid diet and flaxseed tea in large quantities; open the bowels; place hot water bags to the hypogastrium and perineum, and employ frequent hot sitz-baths, or slow hot or cold rectal irrigations

lasting one hour and repeated every two or three hours, using a Kemp or Chetwood double-current tube. For severe pain, inject morphine and atropine into the perineum, or administer the drugs by mouth, or insert the following suppository:

℞ Extracti opii..... gr. ½
Extracti belladonnæ..... gr. ¼
Olei theobromatis, q.s.
M. et ft. suppos. Mitte talis 6.
Sig.—One every six or eight hours.

Iodex suppositories are recommended. Prescribe diuretics and balsamics (see Gonorrhœa.) Aspirin (*q.v.*) relieves pain and produces diaphoresis. Casper prescribes salicylic acid, gr. 15, per day. If retention of urine occurs, and the patient cannot urinate while in the hot sitz-bath, and after the administration of morphine, catheterize him with a small soft catheter regularly, using sterile oil as a lubricant, and wash out the bladder with silver nitrate solution, 1 : 8000. The congestion causing the retention usually soon subsides.

Even should an abscess form, spontaneous resolution may occur, or the abscess may break into the urethra, rectum, or externally, followed by quick healing. If, however, the urethra is obstructed, or the inflammation is spreading, evacuate the abscess through the perineum. Make a lateral incision down to the bulb, avoiding the compressor urethræ muscle. Use the finger to bore with. The seminal vesicles may also be involved (see Seminal Vesiculitis). After packing the abscess cavity with gauze, "carefully approximate the levator ani muscles, if these have been divided in the operation, so as to prevent pressure necrosis of the rectum" (Young). The prognosis in abscess cases in young persons is good.

II. Chronic Prostatitis.—Enjoin the observance of correct hygiene, viz. adequate rest and exercise, sexual continence, fresh air day and night, a daily morning tepid bath, in a warm room, before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, rest before and after meals, a simple bland diet, no alcohol, and regulation of the bowels. Prescribe a tonic of nux vomica or strychnine (Part 11).

About once every four to seven days (no oftener), after urination, massage the prostate with attention to periprostatic indurations, followed by irrigation of the bladder and urethra, by means of hydraulic pressure (see under Gonorrhœa), with bichloride, 1 : 60,000 to 1 : 10,000, or silver nitrate, 1 : 50,000 to 1 : 10,000 to 1 : 1000, or potassium permanganate, 1 : 8000 or 1 : 6000 to 1 : 1000, or protargol, 1 : 2000, or argyrol, 1 : 100. Then, after the patient has emptied his bladder, (some advise a full bladder), pass a large steel sound, (not under 16 F.) keep it in five minutes, unless painful, and massage indurated areas on the under surface of the urethra upon the sound. Employ a larger sound at each subsequent sitting, up to 23 or 24 F., then Oberländer's or Kollman's dilators. After dilating and massaging the urethra, irrigate, and then, after the patient has emptied his bladder, apply with Young's or Robbin's ointment depositor, to the posterior urethra and verumontanum, an ointment prepared with lanolin as a base:

℞ Acidi carbolici..... gr. x
Adipis lanæ hydrosi..... ℥i (Young).

℞ Ichthyolis..... gr. xlviii
Adipis lanæ hydrosi..... ℥i

℞ Iodi..... gr. vi
Potassii iodidi..... gr. xxx
Olei amygdalæ dulcis..... ℥i
Adipis lanæ hydrosi..... ℥i (Finger).

Once every week or two, instil into the posterior urethra by means of a Keyes-Ultzmann or Guyon syringe, two to three drops of a 5 per cent. silver nitrate solution (Young), or one dram of a 1 per cent. solution (Kidd). Make topical applications to the anterior urethra, if required. The verumontanum may be painted with a 20 per cent. solution of silver nitrate through the endoscope. Cold or hot lavage through a double urethral catheter, or psychrophore (Gr. *ψυχρός* cold + *φορεῖν* to bear), prolonged hot rectal lavage, morning and night, through a Martin, Kemp, or Chetwood two-way tube, hot sitz-baths, and faradization of the prostate (one electrode in the rectum and the other over the pubes) are beneficial.

After four to six weeks of the above treatment, give the patient a rest for at least three weeks (Kidd), "to see what has been accomplished" (Young). Prostatic massage is of most importance.

If obstructive prostatitis is not corrected by the above measures, "the median obstruction may be removed by the Bottini operation, or by prostatectomy (perineal or suprapubic), or by simple division of the bar, by means of one or two incisions, through a perineal incision." (Young.)

In obstinate, severe chronic prostatitis which does not respond to conservative treatment, especially where there is a constant presence of residual urine in the

bladder, a partial "conservative perineal prostatectomy" (leaving the median lobe) may be performed. (Young.)

Young says: "The prognosis under treatment is excellent." H. Cabot says it is rarely cured under a year.

Prostatorrhœa.—Gr. *προστάτης* prostate + *ῥοία* flow. See Sexual Neuroses.

Pruritus.—L. *pruri're*, to itch.

Etiology.—(a) Pruritus Scroti.—Pelvic congestion due to cardiac, renal, hepatic, pulmonary, or splenic disease, pelvic tumors, constipation, intestinal catarrh, etc.; gouty diathesis; diabetes; hyperthyroidism; jaundice; heat; cold; certain foods and drugs (morphine, iodine, iodoform, alcohol, tea, coffee, tobacco, etc.); traumatism; uncleanliness; too frequent cleansing; decomposition of sweat; urethritis; cystitis; vesical calculus; urinary incontinence; alkaline, hyperacid, purulent, or saccharine urine; onanism; pent-up sexual energy; neurotic disposition; pediculosis; scabies; fleas; eczema; intertrigo; etc.

(b) Pruritus Meati Urinarii.—Urethritis; urethral stricture; stone; cystitis.

Treatment.—Attend to the cause. Local remedies for scrotal itching are the following:

℞ Argenti nitratis ..... gr. x
Spiritus ætheris nitrosi ..... ʒi

M. Sig.—Paint on the itching parts with a camel's-hair brush.

℞ Liquoris potassæ ..... ʒii
Acidi carbolici ..... ʒiv
Olei bergamot ..... ♏x
Olei lini, q.s. ad ..... ʒii

M. Sig.—Apply as required, for itching.

℞ Hydrargyri ammoniati ..... gr. x–xx
Petrolati ..... ʒi

Pyelitis.—See Pyelonephritis in Part 1.

Pyelonephritis.—See Part 1, General Medicine and Surgery.

Pyronephrosis.—See Pyelonephritis, in Part 1.

Pyuria.—See Part 1, General Medicine and Surgery.

Rectal Gonorrhœa.—L. *rec'tum*, straight. See under Gonorrhœa.

Renal Abscess.—L. *ren*, kidney; *absc'essus*, a going apart. See Pyelonephritis, in Part 1.

Angioneurosis.—Gr. *ἀγγεῖον* vessel + *νεῦρον* nerve. See under Hæmaturia.

Artery, Aneurysm of the.—L. *ren*, kidney. See Aneurysm of the Renal Artery, in Part 2.

Calculus.—L. *cal'culus*, pebble. See Nephrolithiasis, in Part 1.

Renal Cancer.—L. *can'cer*, crab. See Tumors of the Kidney.

Colic.—G. *κωλικός*. See Nephrolithiasis, in Part 1.

Cysts.—Gr. *κύστις* bag. See Tumors of the Kidney.

Echinococcus Disease.—Gr. *ἐχῖνος* hedge-hog + *κόκκος* berry. See Tumors of the Kidney.

Epistaxis.—Gr. *ἐπίσταξις*. See under Hæmaturia.

Fistula.—See Fistula, Renal, in Part 2.

Hemorrhage.—Gr. *αἷμα* blood + *ῥηγνύναι* to burst forth. See Hæmaturia.

Hydatid Disease.—Gr. *ὑδατίς* vesicle. See Tumors of the Kidney.

Hypernephroma.—Gr. *ὑπέρ* over + *νεφρός* kidney + *-ωμα* tumor. See Tumors of the Kidney.

Infections.—L. *infec'tio*. See Pyelonephritis, in Part 1.

Injuries.—See Kidney, Injuries of the.

Neuralgia.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See under Hæmaturia.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Kidney.

Stone.—See Nephrolithiasis, in Part 1.

Suppuration.—L. *sub*, under + pus, *pur'is*, pus. See Pyelonephritis, in Part 1.

Tuberculosis.—See Pyelonephritis, in Part 1.

Tumors.—See Tumors of the Kidney.

Retention Catheter.—Gr. *καθετήρ*; L. *retenti'o*. See under Fistula, Urethral.

Cyst, Epididymal.—Gr. *κύστις* cyst; *ἐπί* on + *δίδυμος* testis. See Spermatocele.

Retention of Urine.—L. *retenti'o*; *uri'na*. The condition may be acute or chronic. Acute retention is accompanied by great pain. In chronic retention, dribbling of urine is an important early symptom. Inspection and percussion reveal a distended bladder.

Etiology.—Paralysis or paresis or atony of the detrusor musculature of the bladder, due to prolonged voluntary retention, arteriosclerosis of the vesical vessels, severe parenchymatous cystitis leading to sclerosis, cerebral or spinal disease or injury, injury of the bladder, operation, shock, hysteria, fevers (malaria, diphtheria, scarlet fever, typhoid fever); sphincteric spasm due to peritonitis, appendicitis, strangulated hernia, orchitis, epididymitis, paravesical inflammation, contusion or laceration of the abdomen, bladder, or urethra, operations within the pelvis, in the rectum, or along the genito-urinary tract, masturbation, sudden chilling of the body; urethral spasm occurring com-

monly in urethritis and stricture; obstructive lesions, *e.g.*, congenital occlusion of the meatus, congenital phimosis or imperforate prepuce, congenital cyst in the sinus pocularis, inflammation of the neck of the bladder, effusion of blood within the bladder, urethral stricture, stricture at the neck of the bladder, pelvic tumors, vesical tumor, urethral tumor, impacted stone or foreign body, exostosis of the pelvic bones, fecal accumulation, valves at the neck of the bladder, deep-seated urethral abscess, extravasation of urine, priapism, prostatic hypertrophy, a median prostatic bar, prostatic atrophy, prostatitis.

Treatment.—In congenital phimosis, slit up the dorsum of the prepuce or exsect the latter. If the meatus is occluded, perform meatotomy as described under Stricture of the Urethra. Rupture a cyst in the sinus pocularis by passing a small, slightly curved silver probe. Attend to other causal conditions as directed under their respective headings.

For acute retention employ hot applications to the hypogastrium and perineum, hot rectal lavage through a double-way tube, or a hot hip-bath, and have the patient attempt to urinate while in the bath. At the same time administer hot drinks, and perhaps morphine and atropine hypodermically, for the purpose of relaxing sphincteric spasm. The sound of trickling water may be helpful. If these measures fail, try to pass a soft rubber catheter (in a child of one year, a No. 4 or 5 American catheter). If the bladder is extremely distended, do not withdraw all the urine at once, for fear of hemorrhage and collapse, but wait a few hours before emptying the bladder, or empty the bladder very slowly, allowing no less than twenty minutes for its complete evacuation. Then wash it out with warm boiled boric acid solution, ʒi–iv to the pint, if deemed advisable, and administer urotropine, gr. x, t.i.d., for the first day. Continue the hot applications to the hypogastrium and perineum, and give a brisk purgative, *i.e.*, calomel or castor-oil (see Part 11).

If the soft rubber catheter can not be passed because of spasm, the latter may be made to relax slowly by holding a good sized metal catheter "firmly against the face of the spasmed area."

In stricture, it may be advisable to produce slight general anæsthesia or to inject into the urethra one dram of 2 per cent. cocaine solution, with adrenalin, followed at the end of ten minutes by irrigation with warm boric acid solution, ʒi–iv ad Oi, and the injection of sterile oil. Then try to pass a metal or soft catheter, the latter aided, if need be, by a stylet, down to the smallest sized catheter; or try to pass a Gouley tunnelled catheter over a filiform, or a filiform with follower. If unsuccessful, try to pass a filiform (see under Stricture of the Urethra), to be left in place for the urine to dribble past. Then place the patient in a hot bath for fifteen to thirty minutes; then wrap him in blankets, and administer hot lemonade, 10 grains of quinine, and ¼ grain of morphine, and place a hot flaxseed poultice over the lower abdomen. Later it may be possible to pass the tunnelled catheter over the retained filiform. If the symptoms of retention, however, are urgent, aspirate the bladder, suprapubically, and induce free perspiration. Aspiration may be repeated every eight hours for one day; then, if catheterization is still impossible, perform perineal urethrotomy, reëstablish the normal calibre of the urethra, and insert a catheter (see Stricture of the Urethra).

In cases of hemorrhage in which a clot obstructs the passage of the catheter, forcibly inject hot salt or alum solution, ʒi ad Oi, or hot phenol solution, 1 per cent., or a cool solution of sodium bicarbonate. A large woven catheter, or Brodie's overcurved silver catheter, or Gross's blood catheter, or Bigelow's lithotrite and evacuator may be employed. Afterward insert a full-sized soft rubber retention catheter, etc., as described under Hæmaturia.

For inoperable malignant cases, perineal or suprapubic drainage may be required.

For acute retention associated with prostatic hypertrophy, see the latter.

For the consideration of atony and paresis or paralysis of the bladder, see Paralysis and Paresis of the Bladder. In connection with vesical spasm, see Bladder Irritability.

Sacculations of the Bladder.—See Bladder Diverticula or Sacculations.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. (See Tumors.)

Sclerosis of the Corpora Cavernosa et Spongiosum.—Gr. *σκλήρωσις* hardness. See Tumors of the Penis.

Scrotum, Elephantiasis of the.—L. *scro'tum*, bag. See Elephantiasis of the Scrotum.

Hæmatoma of the.—See Hæmatoma, Scrotal.

Inflammation of the.—See Inflammation of the Scrotum.

Lymph.—See Elephantiasis of the Scrotum.

Scrotum, Pruritus of the.—See Pruritus.

Semen, Abnormal Loss of.—L. *se'men*, seed; *ab*, from + *nor'ma*, rule. See Sexual Neuroses.

Seminal Calculus.—L. *se'men*, seed; *calc'ulus*, pebble. Pain on micturition and defecation may be present, and the stone may be felt by means of a metal sound in the bladder and the finger in the rectum. If the ejaculatory duct is occluded, severe spasmodic or colicky pain occurs during orgasm and semen is retained.

Treatment.—For the relief of pain, administer hot rectal douches or hot sitz-baths and morphine. Attempt to crush the stone through the rectum by compressing it against a sound in the bladder.

Seminal Pollutions.—L. *pollu'tio*. See Sexual Neuroses.

Vesicles, Inflammation of the.—See Seminal Vesiculitis.

Vesicles, Tuberculosis of the.—See Tuberculosis of the Seminal Vesicles.

Vesiculitis; Spermatocystitis.—L. *se'men*, seed; *vesi'cula*, vesicle; Gr. σπέρμα seed + κύστις bladder + -ιτις inflammation. Spermatocystitis is usually gonorrhœal in origin (for tuberculous infection, see Tuberculosis of the Seminal Vesicles). It is frequently not distinguishable from prostatitis. Diagnostic features are the occurrence of frequent erections and pollutions, the presence of pus in the semen, and perhaps colicky pains referred to the lower rectum.

Treatment.—Mild cases recover without treatment. In acute cases, put the patient to bed on light diet, with plenty of water, open the bowels, administer urotropin (*q.v.*), or diuretics and balsamics (see Gonorrhœa), and employ frequent hot sitz-baths, or slow hot or cold rectal irrigations lasting one hour and repeated every two or three hours, using a Martin, or Kemp, or Chetwood double-current tube. For severe pain, administer morphine and atropine, or insert the following suppository:

℞ Extracti opii ..... gr. ss
Extracti belladonnæ ..... gr. ¼
Olei theobromatis, q.s.
Mitte talis suppositoria No. 6.
Sig.—One every six or eight hours.

If an abscess occurs, open it through the rectum, first dilating the sphincter ani under anæsthesia, and cleansing the rectum. Confine the bowels afterward.

In subacute and chronic cases, strip the vesicles through the rectum with "a smooth metal bulb mounted on a handle" (Felecki's instrument), with the bladder full, about once every two to seven days. Follow this, after the patient has urinated, by irrigation of the bladder and urethra, as described under Chronic Prostatitis. Prolonged hot lavage through a rectal thermophore and hot sitz-baths are beneficial. Forbid sexual excess. Avoid overtreatment in neurasthenic patients.

Sexual Neurasthenia.—L. *sexua'lis;* Gr. νεῦρον nerve + ἀσθένεια debility. See Sexual Neuroses.

Neuroses.—L. *sexua'lis;* Gr. νεῦρον nerve.

Symptomatology.—Frequent pollutions; spermatorrhœa; prostatorrhœa; urethrorrhœa; impairment of sexual vigor; deficient erection; premature ejaculation; pain in the testicles and epididymis; hyperæsthesia of the glans penis; pain over the bladder before and after urination; urgency of urination and dribbling of urine, the urine being normal; involuntary contractions of the cremaster muscles; lumbo-sacral neuralgia; general neurasthenic symptoms, cerebral, spinal, circulatory, and digestive.

Spermatorrhœa differs from pollution in that the semen lost is not forcibly ejected, and is not associated with erection, voluptuous feeling, or orgasm. It generally follows defecation, rarely micturition. The secretion should be examined microscopically to distinguish it from that of prostatorrhœa and urethrorrhœa.

Pollutions are usually nocturnal. They are normal when resulting from sexual abstinence. They become pathological only when they occur as frequently as several nights in succession, when erection and voluptuous feeling are considerably diminished, and when the general health appears to be suffering.

Etiology.—Neurotic or neurasthenic temperament; excessive onanism, particularly masturbation; coitus interruptus rarely; prolonged unsatisfied sexual desire; early stage of spinal cord disease (myelitis, tabes, etc.); spermatocystitis; gonorrhœa; prostatitis.

Prognosis—The prognosis is good, except in cases with an hereditary neurotic disposition. Nocturnal pollutions are of favorable prognosis; but diurnal pollutions, says Casper, are "difficult to influence."

Treatment.—Enjoin the observance of good hygiene, *e.g.*, adequate rest and exercise, fresh air day and night, a daily morning tepid bath in a comfortable room, before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel, a

bland nutritious diet, excluding tea, coffee, alcohol, spices, sweets, highly nitrogenous food, and tobacco in excess; rest before and after eating; regular hours of eating and sleeping, no food within three or four hours of bedtime, a hard bed, light bed covering, prompt rising in the morning, regulation of the bowels, local cleanliness and cold water sprays or douches. To prevent sleeping upon the back, with resulting nocturnal pollutions, have the patient tie a towel around the waist knotted in the back. Correct masturbation (*q.v.*); but, in order to allay hypochondriasis, assure the patient that the evil results of masturbation are generally exaggerated. Pollutions and spermatorrhœa associated with chronic gonorrhœa, prostatitis, or vesiculitis respond to the treatment of these conditions (*q.v.*, under their respective titles); but overtreatment should be avoided. Occasional cauterization (once every week or two) of the verumontanum with silver nitrate, 1 to 10 to 20 per cent., is useful for the purpose of reducing congestion and obtunding its sensibility, especially in cases of deficient erection, premature ejaculation, prostatorrhœa, and nocturnal emissions, in which dilated vesicles and prostate should be massaged every four to seven days. The cauterization may be accomplished by means of Guyon's or Ultzmann's syringe, which is inserted until the membranous urethra is passed, as ascertained by feeling the resistance subside or by rectal examination. Then one drop of the silver solution is injected, the bougie pushed a little farther and another drop injected, and so on up to the internal sphincter of the bladder; or one may begin at the bladder (Casper). Says Keyes: "If some benefit is not derived from the first two or three applications it should not be continued." Cold or hot lavage through a double catheter, the passage of metal sounds of increasing sizes every three or four days for five minutes at a time, vibratory massage of the prostate, and galvanization of the prostate with the negative electrode within the prostatic urethra and the other over the perineum, with a current no greater than five milliampères, may be serviceable. The bromides, ergot, strychnine, iron, or arsenic may be prescribed when deemed useful (see Drugs, Part 11).

Assure the patient that he will get well. Marriage is curative in purely functional cases.

Spasm of the Neck of the Bladder.—Gr. *σπασμός*. See Bladder Irritability.

Spasm, Urethral.—See Stricture of the Urethra.

Spasm, Vesical.—L. *vesíca*, bladder. See Bladder Irritability.

Spermatic Cord, Carcinoma of the.—Gr. *σπέρμα* seed; *χορδή* cord; *καρκίνος* crab + *-ωμα* tumor. See Tumors of the Testis, Epididymis, and Spermatic Cord.

Hydrocele of the.—See Hydrocele.

Sarcoma of the.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Testis, Epididymis, and Spermatic Cord.

Torsion of the.—L. *tor'sio, torquére*, to twist. See Injuries of the Testicle.

Tumors of the.—See Tumors of the Testis, Epididymis, and Spermatic Cord.

Spermatocele.—Gr. *σπέρμα* semen + *κήλη* tumor. An epididymal retention cyst situated above and behind the testicle and containing spermatozoa.

Treatment.—Let alone if giving no trouble; otherwise excise the sac. Aspiration and the injection of carbolic acid, as employed for hydrocele, is rarely effectual.

Spermatocystitis.—See Seminal Vesiculitis.

Spermatorrhœa.—Gr. *σπέρμα* seed + *ῥοία* flow. See Sexual Neuroses.

Splanchnoptosis.—See Part 1, General Medicine and Surgery.

Splenoptosis.—Gr. *σπλήν* spleen + *πτῶσις* fall. See Splanchnoptosis in Part 1.

Stammering of the Bladder.—See Bladder Irritability.

Sterility in the Male.—L. *steril'itas*, barrenness.

Etiology.—Tight stricture of the urethra; congenital urethral narrowing; phimosis; urethral fistula; extreme grades of epispadias and hypospadias; congenital or acquired shortness of the frenum, causing the penis to bend downward; congenital obstruction or deviation of the ejaculatory ducts (very rare; with the ducts directed posteriorly the semen is ejaculated into the bladder); acquired obstruction or deviation of the ejaculatory ducts due to perineal abscess, gonorrhœa, trauma, fibrous degeneration, tuberculous ulceration, stones or concretions in the ejaculatory ducts, prostatic hypertrophy, or prostatic calculi; absent or rudimentary penis; exostrophy of the bladder with very short penis; tumors of the penis or scrotum; mutilation of the penis; abnormal size of the penis; urethral or preputial calculi; varix of the dorsal vein of the penis; sclerosis of the corpora cavernosa, rarely of the corpus spongiosum, causing a bending of the penis during erection (possible causes are a gouty diathesis, injury

during coitus, violent erections, gonorrhœa, diabetes mellitus—the sclerosis diminishes as the diabetes improves); curvatures of the penis, due to periurethral abscess, gonorrhœal indurations, ossification of the septum or fibrous sheath of the corpora cavernosa, gummata of the corpora cavernosa, and fracture of the penis; scrotal hernia; hydrocele; elephantiasis; non-irritability of the ejaculatory centre, either congenital (incurable) or acquired (curable), the latter due to excessive venery, particularly masturbation; absence of sensibility of the penis, either congenital or acquired, the latter due to ulceration or scar formation or other causes; azoöspermia (absence of spermatozoa from the semen), due to absence, arrest of development, or atrophy of the testicles, the latter caused by cryptorchidism, disease or injury of the central nervous system, orchitis, prolonged compression by hydrocele, scrotal hernia, or varicocele, syphilis, carcinoma, and tuberculosis; azoöspermia due to absence or occlusion of the epididymis and vas deferens, either congenital or acquired, the latter due to epididymitis, usually gonorrhœal; azoöspermia due to prostatitis and vesiculitis; azoöspermia due to general syphilis, excessive morphinism, chronic alcoholism, and debilitating diseases, but rarely tuberculosis; physiological azoöspermia, resulting from too frequent sexual intercourse (after a period of rest the spermatozoa gradually increase in size, numbers, and vitality—Casper); voluntary prevention of ejaculation; prevention of ejaculation due to aversion, etc.

(See Part 2, on Gynæcology, for Sterility in the Female.)

Treatment.—Correct the cause, if possible. Divide the frenum if it is short and causes the penis to bend downward. Cases due to excessive venery should be treated by prolonged sexual abstinence, a generous diet, local treatment if the urethra is hyperæsthetic, and the faradic current for lost local sensibility, etc., as described under Impotence. "Azoöspermia, due to occlusion of the vas deferens resulting from gonorrhœal inflammation has been treated by anastomosing the vas with the head of the epididymis" (Bonney). (The preceding is chiefly from Casper.)

Stomatitis, Gonorrhœal.—Gr. *στόμα* mouth + *-ιτις* inflammation. See Buccal Gonorrhœa.

Stone.—See Calculus.

Stricture of the Neck of the Bladder.—L. *strictu'ra.* Vesical cervical stricture is the result of a chronic posterior urethritis, nearly always post-gonorrhœal, but sometimes due to stone in the bladder or prostatic hypertrophy. Both young and old are affected (Keyes). (Tuberculous stricture is not here considered.)

Keyes says: "When a chronic urethritis, whether gonorrhœal or not, drags on indefinitely and is rebellious to treatment, stricture may be diagnosed if difficulty of urination and imperative urination are present without any acute inflammation, and the presence of residual urine without hypertrophy of the prostate clinches the diagnosis." "In the second place, when there are all the symptoms and signs of prostatic hypertrophy, and yet the prostate is not hypertrophied sufficiently to account for the symptoms (and cystoscopy shows the absence of ball-valve middle lobe) there must be either stricture or bar." "The treatment for each is the same," viz. "Chetwood's galvano-prostotomy."

Stricture of the Urethra.—L. *strictu'ra*; Gr. *οὐρήθρα.* Urethral stricture is either congenital or acquired. Acquired stricture is (a) spasmodic or muscular; (b) cicatricial or organic; (c) inflammatory or tumefactive. The first and last are temporary. The rare occurrence of retention in inflammatory stricture is due to muscle-spasm.

I. Congenital Stricture.—Congenital stricture of the urethra occurs at or within the meatus or at the bulbo-membranous junction. It very rarely causes retention of urine.

Meatotomy is performed as follows: After cleansing the parts, insert a cocaine tablet (gr. $\frac{1}{10}$) just within the meatus into the pocket on the floor of the urethra, and drop upon it two drops of adrenalin, 1 : 1000. Then, with a curved bistoury, divide the stricture on the floor of the urethra in the middle line sufficiently to admit a full-sized sound or bulbous bougie. Then pack the meatus with gauze or cotton (dusted with glutol—Keyes) to check the oozing. If the hemorrhage is severe and not checked by gauze packing, insert a full-sized catheter and compress the urethra against the catheter with a bandage. Pass sounds daily until healing is complete.

For premembranous and penile stricture, employ gradual dilation, rarely internal urethrotomy, as described under cicatricial stricture.

II. Spasmodic or Muscular Stricture; Urethrismus.—The following characteristics of spasmodic stricture distinguish it from cicatricial stricture, viz.:

(1) Spasmodic stricture occurs only in the membranous urethra.

(2) A full-sized sound is often more readily passed than a small one if it be allowed to rest against the face of the stricture long enough to tire the muscle.

(3) When a large sound is withdrawn, it is not gripped as in cicatricial stricture.

(4) Spasm relaxes under general anæsthesia.

(5) No urethral discharge accompanies spasmodic stricture unless cicatricial stricture is present.

Etiology.—Nervousness; shock; fatigue; masturbation; sudden chilling of the body; local strain; contusion or laceration of the urethra, bladder, or abdomen; operations within the pelvis, in the rectum, or along the genito-urinary tract; peritonitis; appendicitis; strangulated hernia; orchitis or epididymitis; paravesical inflammation; rectal or neighboring diseases; vesical calculus; urethritis; congenital, inflammatory, or cicatricial stricture; hyperæsthesia of the urethra; concentrated urine; gouty or rheumatic diathesis.

Treatment.—For the treatment of retention, see Retention of Urine. As a preventive measure, one may pass a full-sized steel sound, in order to overstretch the compressor urethræ muscle, and instil silver nitrate into the deep urethra (see under Sexual Neuroses) in order to "blunt its sensibility." (Keyes.)

III. Cicatricial or Organic Stricture.—**Etiology.**—Gonorrhœa (about 90 per cent.); traumatism; tuberculosis; syphilis; chancroid; abscess; neoplasms; hydatid cyst; etc.

Symptomatology.—A slight urethral discharge (gleet); frequent and often painful micturition; a slow, small, irregular urinary stream; dribbling at the end of micturition; perhaps hæmaturia; sometimes acute retention following overeating, alcoholism, or exposure to cold.

Gonorrhœal stricture appears in from two to five to ten years following the urethral inflammation; whereas traumatic stricture follows the injury within a few weeks to a year. Gonorrhœal stricture may occur in any part of the urethra except the prostatic portion, but rarely involves the bulbomembranous junction or the membranous urethra. Traumatic stricture usually involves the membranous urethra, except when caused by foreign bodies, bullet or knife injuries. The prognosis in gonorrhœal stricture is good, in traumatic stricture not so good. The points of distinction between organic and spasmodic stricture are enumerated above, under Spasmodic Stricture.

The possible consequences of stricture are hemorrhoids, hernia, prostatitis, cystitis, pyelonephritis or pyonephrosis, stone, periurethral inflammation, urinary infiltration or extravasation, urinary fistula.

Diagnosis and General Instructions.—The number of strictures, if more than one, the location and calibre are diagnosed by instrumental exploration. The instruments required for this purpose and for gradual dilatation are:

Conical steel sounds or bougies with the Thompson curve, Nos. 12 to 35, French scale. The double taper sound is best because it causes but transitory stretching of the meatus.

Filiform bougies, one dozen, French or whalebone, the latter being useful in very tight strictures. Keyes prefers the Banks bougie.

Gouley's tunnelled catheter, Nos. 8 to 16.

Janet-Guyon or Le Fort or Thompson dilators, various sizes.

Flexible bougies with conical, bulbous, and oval tips.

Instrument lubricants are sterile liquid cosmoline (albolene or liquid petrolatum), sweet oil, vaseline, glycerine, synol soap, lubrichondrin, and the following:

℞	Hydrargyri oxycyanidi	gr. iiiss
	Glycerini	ʒvss
	Tragacanthæ	gr. xlvi
	Aquæ destillatæ	ʒiii Casper.

In order to prevent "urethral chill," one should administer urotropine, gr. v–x, t.i.d. p.c., for two days before and after instrumentation; and following instrumentation the urethra should be irrigated with silver nitrate, 1 : 10,000, or potassium permanganate, 1 : 4000, or boric acid, ʒi-iv ad Oi; and the patient should be instructed to remain quiet and to take a laxative. Some order 5 grains of quinine and one ounce of whiskey one hour before instrumentation. Before introducing the instrument, have the patient empty the bladder, cleanse the parts with soap and water and bichloride, 1 : 1000, and irrigate the urethra (see under Gonorrhœa) with warm boiled boric acid solution. One may then inject, if deemed advisable, half a dram of a 5 per cent. emulsion of iodoform in glycerine (Beck's prophylactic injection), preceded, if need be, by one dram of cocaine solution, 2 per cent., to be retained five minutes, and then washed out with warm boric acid solution.

To explore the urethra, introduce a warm, conical steel sound, lubricated at its tip, as large as the meatus will admit without difficulty (enlarge the meatus if it is con-

tracted—see Meatotomy, under Congenital Stricture). The patient lies upon his back with shoulders raised; the operator stands on the patient's left. The sound is passed as follows: With the left hand holding the penis and exposing the meatus, and the fingers of the right hand holding the sound lightly with its staff "horizontal to and in the line of the fold of the left groin," "draw the penis up over the beak of the sound with the left hand, while the right hand sweeps the shaft or handle across the abdomen to the median line, still keeping it horizontal to the skin surface." "By this time the beak has reached the penoscrotal junction and is entering the fixed part of the urethra." "Then, and then only, is it proper to begin to elevate the shaft." While elevating the shaft, with the left hand against the perineum behind the scrotum, gently lift the beak over the lower segment of the triangular ligament which lies posterior to the bulbous urethra. "This introduces the beak into the membranous urethra." Then depress the handle between the thighs "as its inner end mounts the upward inclination of the prostatic urethra and enters the bladder." Further elevation of the beak by a finger against the perineum or in the rectum is sometimes required (in prostatic hypertrophy or in narrowing of the vesical neck) just before the sound enters the bladder. The latter event is evidenced by the ability to rotate the sound freely. "The withdrawal of the sound is simply the reverse of the steps taken in introducing it." (After Bransford Lewis.)

If the first sound will not pass, employ smaller sizes down to No. 20 or 15 F.; then employ soft bulbous bougies (bougies à boule); and finally filiform bougies, until a passage is made. Insert the filiform until obstruction is met, then gently rotate it between the thumb and finger until the aperture of the stricture is found. If it is not found, insert another filiform, and so on, up to six or eight. Then rotate each in turn. If unsuccessful in finding the orifice, rest for awhile and try again, if necessary withdrawing two or three whalebones and reinserting them after standing on the other side of the patient. If further effort is of no avail, cease the attempt for twenty-four to forty-eight hours, purge the patient, administer belladonna and bromide (see Part 11) for the purpose of relaxing spasm, and before attempting to pass an instrument, inject one dram of cocaine solution, 2 per cent. (?) to be retained ten minutes, then irrigate gently with warm boric acid solution, and inject one dram of a 10 per cent. emulsion of iodoform in glycerine. A general anæsthetic may also be given for troublesome spasm. It may be possible (rarely) to insert the filiform through the endoscope, using adrenalin with which to wipe the stricture until it ceases to bleed. If the filiform should engage the stricture but cannot pass, leave it in for a few hours, when it may be passed. If successful in passing a filiform, pass the smallest-sized Gouley tunnelled catheter over the filiform as a guide, and then the next larger size, if possible; no more, Then put the patient to rest for twenty-four hours, and two to four days later resume treatment as hereinafter described for filiform stricture.

To ascertain the site and length of a stricture, pass a bulbous bougie, large enough not to enter the stricture, down to the latter, and mark off the meatus level. Then pass a flexible olive-tip bougie or bougie à boule into the bladder and withdraw it until an obstruction is encountered, and mark off the meatus level again. The Otis urethrometer may also be used. Remember that "the differentiation of a spasmodic (due to irritation or pain in passing instruments) from an organic stricture may give rise to perplexity at four points along the course of the urethra; these are, mentioned from before backward: just behind the meatus; at a depth of about four inches from the urinary outlet; at the bulbo-membranous junction; and finally, at the junction of the membranous and prostatic urethra." (Horwitz.)

Always bear in mind the importance of employing extreme gentleness in passing sounds; never use force, and do not pass sounds oftener than every fourth day. Urotropine, gr. v, t.i.d.p.c., may be given during the treatment, and the patient should be advised against alcoholism, sexual excitement, and exposure to cold or wet.

Should a false passage be made, put the patient to bed, administer urotropine, and leave absolutely alone for two weeks if the patient can urinate (Keyes), otherwise employ continuous catheterism (see under Fistula, Urethral) for a week or two.

Should urinary infiltration or extravasation occur, perform external perineal urethrotomy under ether at once, dilate the deep urethra and drain the bladder, and incise freely the scrotal, and if necessary, the abdominal subcutaneous tissues, flush the wounds with warm boric acid solution, ʒi–iv ad Oi, in order to wash out the urine, and pack widely open with gauze.

Treat periurethral abscess as follows:

Under ether, with the patient in the extreme lithotomy position, and a guide in the urethra, incise the swelling and lay open all parts of the abscess, avoiding the urethra, then pack with gauze (H. Cabot). Keyes says, a median perineal incision should be made to evacuate and drain the abscess, "the urethra should be opened and the stricture cut."

Should prostatic abscess occur, perform perineal section, cut the stricture, and drain the abscess (see under Prostatitis.)

In acute pyelonephritis or pyonephrosis (*q.v.*), drain the kidney through a retained urethral catheter (see under Fistula, Urethral), or per perineum until the temperature returns to normal. If the temperature persists, however, perform nephrotomy, or if called for, nephrectomy.

These complications require alkaline diluents (see potassium salts, in Part 11, Drugs) and rest.

For the treatment of fistula, see Fistula, Urethral.

Treatment of Organic Stricture.—A. General Remarks.—Employ gradual dilatation for all passable strictures that are not highly irritable (marked by pain, hemorrhage, chill and fever following instrumentation, and due to an associated catarrhal prostatitis), or resilient (marked by a tendency to recontract after every dilatation), or nodular or indurated.

Employ internal urethrotomy to divide firm bands near the meatus or in the pendulous urethra which resist dilatation, and for irritable or resilient strictures between the meatus and the bulbo-membranous urethra, but not including the latter.

Employ external urethrotomy, as a rule, for irritable stricture at the bulbo-membranous junction and beyond, and when there is chronic urinary fever. Says Keyes: "By bracing the patient's general health, by employing rather large doses of hexamethylenamine (*q.v.*), by using the utmost gentleness in sounding, by preferring bougies, which are less violent to the prostatic urethra than sounds, or else blunt sounds whose points need not enter the prostate at all, and by treating the stricture only sufficiently to permit local treatment of the prostatitis until the latter is materially improved—by such means the operation (external urethrotomy) may often be avoided."

Strictures situated at or beyond the bulbo-membranous junction that are resilient (all traumatic strictures are such), nodular, impassable, or complicated by a persistent fistula, require external urethrotomy and the complete removal of all scar tissue, followed by suture or grafting.

B. Treatment of Large Calibre Strictures (*i.e.*, those admitting a sound of 15 or 20 F.).—The patient having taken urotropine, gr. v, t.i.d.p.c., for two or three days, and the parts rendered aseptic, pass a sound a little smaller than that corresponding to the previously ascertained calibre of the stricture. Withdraw it immediately, and pass the next two or three larger sizes, if they will enter almost by their own weight; not otherwise. Cease if blood appears. Follow instrumentation by irrigation with boric acid solution, ʒi–iv ad Oi, or potassium permanganate, 1 : 4000, or silver nitrate, 1:10,000 (see under Gonorrhœa for irrigation technique). Repeat the dilatation every fourth day, if instrumentation is easy; every seventh to tenth day, if difficult. Use increasing sizes of steel sounds up to 27 to 32 F., the gauge of the normal meatus. The latter may be enlarged, if necessary (see Meatotomy) to admit the passage of sounds above No. 25. "Dilatation need rarely be carried beyond the calibre of the normal meatus," says Keyes. "If the stricture when dilated to the size of the meatus recontracts with undue rapidity," however, further dilatation may be carried on by means of the Kollman dilator. After a calibre of 30 or 32 has been reached, the dilating sound should be passed every week, later every two weeks, then every month, every two months, to six months, to a year. A stricture in the pendulous urethra that does not recontract after a rest of three months is considered cured. A stricture in the bulb, however, requires the passage of a full-sized sound once or twice a year or oftener after its apparent cure. This may be done by the patient himself.

Firm bands in the pendulous urethra that resist dilatation should be divided, under ether anæsthesia, by internal urethrotomy, on the floor of the canal (Horwitz), on the roof of the canal (Keyes), using Maisonneuve's urethrotome or Otis's dilating urethrotome, or for strictures near the meatus, the bistoury. Divide the constriction from behind forward. After withdrawing the urethrotome, explore with a full-sized bougie à boule for any remaining constricting bands, which should be incised. After the operation, a bougie corresponding to the full size of the meatus (at least No. 30 F.) should be readily passed. Then irrigate the urethra and bladder with hot normal saline solution (ʒi ad Oi), and insert a soft rubber catheter

to be retained for two to four days, with the patient in bed (see under Fistula, Urethral). Thereafter pass conical steel bougies of gradually increasing size twice a week, until one can be readily passed that corresponds in calibre to the full size of the meatus. Then instruct the patient to pass the sound twice a week for at least six months, and thereafter once a week for three months, etc.

Keyes says: "Internal urethrotomy should always be performed upon the roof of the urethra. It should not be employed for strictures in the perineal urethra, or at the bulbo-membranous junction, unless perineal section is done at the same time." After performing external urethrotomy, insert a perineal tube, which should be removed on the first or second day. The first sound should not be passed until the tenth to fourteenth day. (Keyes.)

To control profuse hemorrhage after urethrotomy.—If within the first two inches of the urethra, pack with a roll of absorbent cotton soaked in adrenalin, 1 : 1000, and apply compression by means of a narrow bandage. After several hours insert a soft rubber catheter to be retained. If the bleeding is farther back, inject one dram of adrenalin, 1 : 2000, and retain five minutes. Then insert a rubber catheter and exert compression with a narrow gauze bandage. If this fails, try compression of the perineum with the finger, or with a crutch with the patient in bed, the ferrule of the crutch braced by the footboard, and the arm-piece making pressure upon a perineal compress.

If the dorsal vein or plexus of Santorini has been wounded, a free perineal incision should immediately be made and the bleeding vessel secured by ligature or purse-string suture. The urethra should be opened on the floor.

C. Treatment of Small Calibre Strictures (*i.e.*, those admitting a sound not over 15 or 20 F.).—Dilate up to No. 15 or 20 F. with soft bougies, then employ steel sounds as for large calibre strictures.

D. Treatment of Filiform Strictures.—After injecting half a dram of a 5 per cent. emulsion of iodoform in glycerine, preceded, if need be, by one dram of a 2 per cent, cocaine solution, retained five minutes, insert a filiform bougie until obstruction is met. Then gently rotate it between the thumb and finger until the aperture of the stricture is found. If it is not found, insert another filiform, and so on up to six or eight. Then rotate each in turn. If unsuccessful in finding the orifice rest for a while, and try again, if necessary withdrawing two or three whalebones and reinserting them after standing on the other side of the patient. If further effort is of no avail, cease the attempt for twenty-four hours. It may be rarely possible to insert the filiform through the endoscope, using adrenalin with which to wipe the stricture until it ceases to bleed. If the filiform should engage the stricture but can not pass, leave it in for a few hours, when it may be passed. If successful in passing a filiform, pass the smallest sized Gouley tunnelled catheter over the filiform as a guide, and then the next larger size, if gently possible; no more. Then put the patient to rest for twenty-four hours. Two to four days later, reinsert the filiform and try to pass a larger-sized tunnelled catheter. Fought's flexible whip bougies with metal shaft attachment may be used. Use increasingly larger sizes until about 16 mm. is reached, then continue the dilatation every fourth day with rubber bougies until No. 24 is reached, when steel dilators may be substituted. In difficult cases in the region of the bulbous and membranous portions of the urethra, one may pass the largest filiform possible and allow it to remain in place for two to four days, when the stricture may be found to be sufficiently dilated to admit a Gouley tunnelled catheter or the Janet-Guyon, Le Fort, or Thompson dilator (chiefly from Horwitz).

If, however, gradual dilatation proves impossible, one may resort to "modified rapid dilatation," as described by Horwitz, provided the stricture is not resilient, irritable, or nodular, and urinary fistula and prostatic or perineal abscess are not present. The operation may also be performed "primarily to facilitate the introduction of a urethrotome or the passage of a grooved staff, so that a required perineal urethrotomy may be performed by means of a guide." The operation is performed as follows (Horwitz):

Equipment: "Set of metallic sounds; filiform bougies; half a dozen Gouley tunnelled catheters of assorted sizes; a soft rubber and two flexible silk catheters, one of which should terminate in an oval tip and the other in a 'rat-tail' extremity; a glass syringe with a capacity of four ounces; a wire stylet to render the soft rubber catheter firm; a Thompson and a Gross dilator; six ounces of a 5 per cent. emulsion of iodoform in glycerine; bichloride solution, 1 : 1000; warm sterile boric acid solution in a fountain syringe; sterile gauze sponges;

sterile tape with which to fasten the catheter in place after the operation."

First do a meatotomy (*q.v.*), if required, and introduce a whalebone filiform bougie up to the neck of the bladder and fasten it there; then put the patient to bed.

Four days later, after a preliminary purge, etherize the patient, irrigate the anterior urethra with bichloride, 1 : 20,000, and inject two drams of the iodoform emulsion. Now thread the protruding end of the filiform through the tunnel of the Thompson dilator and pass the latter "very gently along the whalebone until the obstruction is reached; then slightly withdraw the filiform, grasp both the bougie and dilator and move them both forward together into the bladder." "Then stretch the stricture in three directions (anterior, middle, and posterior)," by slowly turning the thumb-screw on the handle of the instrument, "alternately lessening and increasing the screw power." After dilating the posterior segment, lessen the tension 2 mm., slightly withdraw the blades, and dilate the middle and anterior segments "up to the full capacity of the Thompson dilator." Withdraw both filiform and dilator, insert the Gross dilator, and dilate to the full normal dilatability (perhaps a little larger than the calibre of the meatus); then pass a full-size metallic bougie to determine this point. Then (the following to be done after all operations for stricture) insert a soft rubber catheter by the aid of the wire stylet, and fasten it in place by tying to it a piece of tape under the penis, bringing the two ends of the tape around the body of the penis, tying them on the dorsum, and then fastening the ends to a band around the waist, held in position by perineal straps. Then irrigate the bladder with boric acid solution, and inject into the bladder two drams of iodoform emulsion.

Remove the catheter on the fourth day, and thereafter pass conical steel bougies of gradually increasing size twice a week, until one can be readily passed that corresponds in calibre to the full size of the meatus. Instruct the patient to pass the bougie twice a week thereafter for at least six months, and after that once a week for three months, etc.

For the division of resilient, irritable, or nodular filiform strictures, situated anterior to the bulbo-membranous junction, one may employ Horwitz's knife, designed for such cases. It is guided by means of a filiform threaded through a ring at the end of the instrument, the blade being directed toward the floor of the urethra, to the obstruction, which it divides "directly in the median line" from before backward. After cutting the stricture, stretch it with a Thompson dilator up to 18 to 23 mm.; then use the Gross or Otis urethrotome to divide the remaining bands upon the floor of the canal, from behind forward.

The Gross Urethrotome (circumference at the bulb 23 mm.) is "reserved for strictures that are either resilient or irritable, of comparatively recent origin, and not extensively organized, or where the constriction assumes the form of a band or a bridle." The bulbous extremity must be passed at least one-half an inch beyond the stricture; the knife blade is then protruded and drawn forward, while being firmly pressed against the urethral tissue, "until all sense of resistence is overcome," to about one-half an inch in front of the constriction. The Otis urethrotome (circumference 18 mm.) is used "for strictures resilient, irritable, nodular, or fibrous, well organized, and that involve the submucous structure." (Horwitz.)

After withdrawing the urethrotome, explore with a full-sized bougie à boule for any remaining constricting bands which should be incised. After the operation, a bougie corresponding to the full size of the meatus (at least No. 30 F.) should be readily passed. Then irrigate the urethra and bladder with hot normal salt solution, and insert a soft-rubber catheter, to be retained for two to four days, with the patient in bed. Thereafter pass conical steel sounds of gradually increasing size, twice a week, until one can be readily passed that corresponds in calibre to the full size of the meatus. Instruct the patient to pass the sound twice a week thereafter for at least six months, and after that once a week for three months, etc.

Perform external urethrotomy for resilient, irritable, nodular, or impassable strictures situated at or beyond the bulbo-membranous junction (see General Remarks).

E. Treatment of Stricture Complicated by Retention.—It may be advisable to produce slight general anæsthesia, or to inject into the urethra one dram of 2 per cent. cocaine solution, with adrenalin, to be retained ten minutes, and then washed out with warm boric acid solution, followed by the injection of one dram of sterile oil or of a 10 per cent. emulsion of iodoform in glycerine. Then try to pass a metal or soft catheter, the latter aided, if need be, by a stylet, down to the smallest sized catheter; or try to pass a Gouley tunnelled catheter over a filiform. If unsuccess-

ful, try to pass a filiform, to be left in place for the urine to dribble past. Then place the patient in a hot bath for fifteen to thirty minutes; then wrap him in blankets and administer hot lemonade, 10 grains of quinine, and ¼ grain of morphine, and place a hot flaxseed poultice over the lower abdomen. Later it may be possible to pass the tunnelled catheter over the retained filiform. If the symptoms of retention, however, are urgent, aspirate the bladder suprapubically, and induce free perspiration. Aspiration may be repeated every eight hours for one day; then, if catheterization is still impossible, perform perineal urethrotomy, reëstablish the normal calibre of the urethra, and insert a catheter, as previously described.

In evacuating a very distended bladder, allow no less than twenty minutes for the evacuation of the urine, in order to avoid hemorrhage and collapse.

Suppurative Nephritis.—L. *sub*, under + *pus, pur'is* pus; Gr. *νεφρός* kidney + *-ιτις* inflammation. See Pyelonephritis, in Part 1.

Suprarenal Inclusion Tumor of the Kidney.—L. *súpra*, above + *ren*, kidney; *inclus'io*. See Tumors of the Kidney.

Syphilis.—See Part 1, General Medicine and Surgery.

Testis, Carcinoma of the.—L. *tes'tis* or *testic'ulus*; Gr. *καρκίνος* crab + *-ωμα* tumor. See Tumors of the Testis.

Gangrene of the.—Gr. *γάγγραινα* mortification. See Orchitis; and Injuries of the Testicle.

Hydrocele of the.—See Hydrocele.

Inflammation of the.—L. *inflammáre*, to set on fire. See Orchitis.

Injuries of the.—See Injuries of the Testicle.

Irritable.—L. *irritar'e* to tease. See Neuralgia of the Testicle.

Misplaced.—See Undescended Testicle.

Neuralgia of the.—See Neuralgia of the Testicle.

Sarcoma of the.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Testis.

Tuberculosis of the.—L. *tubérculum*, nodule. See under Orchitis.

Tumors of the.—See Tumors of the Testis.

Undescended.—See Undescended Testicle.

Torsion of the Spermatic Cord.—L. *tors'io, torque're*, to twist; Gr. *σπέρμα* seed; *χορδή* cord. See Injuries of the Testicle.

Traumatism.—Gr. *τραῦμα* wound. See Injuries.

Tuberculosis of the Bladder.—L. *tuber'culum* nodule. See Tuberculous Cystitis under Cystitis.

Cowper's Gland.—See Cowperitis.

the Epididymis.—See under Orchitis and Epididymitis.

the Kidney.—See Pyelonephritis, in Part 1.

Tuberculosis of the Prostate.—Gr. *πρό* before + *ἱστάναι* to stand. The symptoms are dysuria and a chronic urethral discharge. The presence of isolated nodules revealed by rectal palpation is pathognomonic. Tuberculous cystitis is prone to occur.

Examine the prostatic secretion obtained by rectal massage for tubercle bacilli, first cleansing the glans penis and prepuce and irrigating the anterior urethra by means of a soft catheter and boric acid solution, ʒi ad Oi, in order to exclude the smegma bacillus. A thin smear of the secretion is fixed upon a clean unused glass slide by drying it in the air and then passing it rapidly thrice through a Bunsen flame, with the smear side down. It is then subjected for five to ten minutes to steaming (not boiling) carbol-fuchsin (one part saturated alcoholic—95 per cent.—solution of fuchsin and nine parts 5 per cent. carbolic acid solution); washed; decolorized one-half minute with spirits of nitrous ether, or with a 10 per cent. solution of sulphuric acid in 95 per cent. alcohol until only the faintest pink color is seen; washed in water; counterstained with Loeffler's methylene blue (saturated alcoholic solution of methylene blue, 30 c.c., with aqueous solution of potassium hydroxide—1 : 10,000, 100 c.c.) for about thirty seconds; washed; dried with filter paper; mounted in Canada balsam; and examined with an oil immersion lens. Perhaps the surest method of securing tubercle bacilli is by Loeffler's modification of the antiformin process of Uhlenhuth: To one or more c.c. of the secretion add an equal quantity of a 50 per cent. solution of antiformin (10 per cent. solution of sodium hypochlorite containing 5 to 10 per cent. sodium hydrate), and boil for no longer than fifteen minutes. To each 10 c.c. of the resulting solution add 1.5 c.c. of a mixture of one part chloroform and nine parts alcohol; shake thoroughly so as to produce a fine emulsion; then centrifuge for fifteen minutes. Pour off the supernatant fluid above the film which lies just above the chloroform, and which holds the tubercle bacilli, place the film upon a glass slide, and remove excess of fluid with filter paper. Add a drop of egg-albumen (preserved with 0.5 per cent. carbolic acid) as a fixative, and make

a thin spread by means of a second slide. Allow to dry, and stain as described above (from Webster's *Diagnostic Methods*).

The Prognosis is not necessarily bad.

Treatment.—Enjoin correct hygiene—rest, fresh air, an abundant diet, etc., as described under Tuberculosis, Pulmonary, in Part 1, on General Medicine and Surgery.

If one of the kidneys, the testis, or epididymis is involved, it should be removed. Says Young, nephrectomy and epididymectomy will cure many cases of prostatic and seminal vesicular tuberculosis. Do not, as a rule, employ local treatment. For the treatment of a complicating tuberculosis cystitis, see under Cystitis.

Tuberculosis of the Seminal Vesicles.—L. *se'men*, seed; *vesic'ula*, vesicle. The vesicles are dilated and tender and show nodular thickening. Their implication is suspected only when the prostate or epididymis is known to be tubercular.

Treatment.—Enjoin correct hygiene—rest, fresh air, an abundant diet, etc., as described under Tuberculosis, Pulmonary, in Part 1, on General Medicine and Surgery. Do not employ massage or douches.

If one of the kidneys, the testis, or epididymis is involved, it should be removed. Says Young, nephrectomy and epididymectomy will cure many cases of prostatic and seminal vesicular tuberculosis. If the disease is limited to the vesicles and vas deferens, one may perform Young's suprapubic-retrocystic-extraperitoneal operation. Keyes, however, advocates vesiculectomy only in the exceptional cases with "extensive caseation, suppuration, or fistulization."

Tuberculosis of the Testicle.—L. *tes'tis*, or *testic'ulus*. See under Orchitis.

Tumors of the Bladder.—L. *túmor*, from *tum'ere*, to swell.

Varities.—Papilloma or villous tumor (the most common; it tends to become malignant, therefore examine the base microscopically for signs of malignancy); carcinoma (next in frequency, but rare); adenoma; fibroma; myoma; lipoma; angioma; enchondroma; sarcoma; cysts (all very rare). Papilloma and carcinoma are often multiple as a result of contact inoculation.

Symptomatology.—Hæmaturia, usually abundant (the most important symptom); frequent micturition; pain; cystitis; sudden stoppage of the urinary stream (may also occur in stone); fragments of tumor in the urine.

Make a bimanual and cystoscopic examination. A general anæsthetic may be required on account of the extreme pain.

Treatment.—Papillomata are best treated through a ureteral catheterizing cystoscope by means of the high-frequency current (fulguration; from L. *ful'gur*, lightning; see Medical Electricity, in Part 1). If very many tumors are present, it may be necessary to open the bladder suprapubically and then employ fulguration. The technique is as follows: Distend the bladder with boric acid solution, and introduce the cystoscope. Through the catheter channel of the latter introduce a fulguration catheter connected with one pole of the electrical apparatus, and approach it to the tumor. The other electrode, in the form of a large flat plate, is placed under the buttocks if the tumor occupies the base of the bladder, and over the hypogastrium if the tumor is in the upper wall of the bladder. Apply the current to the pedicle of the tumor, if possible, otherwise begin the sparking at the periphery. A large pedunculated tumor may first be snared, and then the base fulgurated. The wire may either be inserted into the substance of the tumor, or brought almost in contact with it. Each application of the current may last from three to five minutes, or less, or until the part treated is thoroughly blanched. The whole tumor may be gone over in one sitting; or several sittings, at intervals of ten to fourteen days, may be required. Remember that a certain amount of local reaction follows this mode of treatment, and it should not be mistaken for cancer. (Kretschmer.)

Casper advises against excision or resection operations where the tumor is benign and causes inconsiderable symptoms, and also in malignant cases unless "stanchless hemorrhage or intolerable and uncontrollable tenesmus exist," when suprapubic cystoscopy should be performed, and the bladder irrigated daily through the urethra with warm boric acid solution, ʒi to the pint.

The X-ray may be tried in inoperable cases, and also following operation, in order to prevent recurrence, if possible. For the latter purpose, irrigation of the bladder once weekly, for at least a year, with a 5 per cent. solution of resorcin is also advised. Once or twice a year, for at least three years, following operation, the bladder should be examined cystoscopically for possible recurrence.

For the relief of pain, strangury, and hemorrhage, employ rest, an ice-bag to the hypogastrium, and opiates with belladonna (see Drugs, Part 11). For the treat-

ment of severe hemorrhage, see under Hæmaturia.

Tumors of the Cord.—See Tumors of the Testis, Epididymis, and Spermatic Cord.

Epididymis.—See Tumors of the Testis, Epididymis, and Spermatic Cord.

Kidney.—See Part 2, Gynæcology.

Penis.—

Varieties.—Simple papilloma or ordinary wart (see Verrucæ); verruca acuminata or venereal wart (see Verrucæ); syphilitic condyloma; gumma; sarcoma; epithelioma; adenoma; angioma; lipoma; chondroma; osteoma; dermoid cyst; sebaceous cyst; horns; circumscribed fibrosis or sclerosis of the corpora cavernosa and corpus spongiosum.

Sclerosis of the corpora causes bending of the penis during erection. Possible causes are a gouty diathesis, injury during coitus, violent erections, gonorrhœa, and diabetes mellitus (the sclerosis diminishes as the diabetes improves).

Papillomata and horns sometimes develop malignancy.

Treatment.—Sarcoma and epithelioma demand early removal of the penis and inguinal glands.

Horns should be completely excised because of their tendency to become malignant.

There is no known effectual treatment of sclerosis.

For the treatment of warts of all kinds, see Verrucæ.

Tumors of the Prostate, Malignant.—Cancer of the prostate is not very rare. According to Kidd, it constitutes 10 per cent. of prostatic enlargements. Stony hardness of an enlarged prostate in a man over forty or fifty years of age, especially when associated with pain in the urethra, perineum, or rectum, and lumbago or sciatica, points to cancer. A piece of the prostate may be cut out per perineum for examination.

Sarcoma is very rare. It occurs usually in children, and usually grows rapidly.

Treatment.—Young's radical perineal operation should be undertaken if the seminal vesicles are not involved. Palliative measures in inoperable cases include (a) catheterization, preferably with a straight rubber catheter, or, if necessary, the stiff gum or silver catheter, whenever required; (b) suprapubic drainage, using a Bloodgood bag (consult Young in Keen's *Surgery*, Vol. IV, p. 462); (c) partial perineal or suprapubic prostatectomy; (d) the Bottini electrocautery operation; (e) the use of radium (*q.v.*, in Part 1) per rectum, bladder, or in the substance of the gland. Per rectum one may use 100 mgrms. of radium filtered through 2 mm. of platinum, in a 2 mm. rubber tube, left in situ for twelve to fifteen hours. Longer exposures may be given if the tube can be completely buried in the growth. In the bladder, since thick filters can not be used, the exposures must be correspondingly reduced. The treatment may be repeated in a month.

Tumors of the Spermatic Cord.—See Tumors of the Testis, Epididymis, and Spermatic Cord, below.

Tumors of the Testis, Epididymis, and Spermatic Cord.—L. *tes'tis;* Gr. ἐπί on + δίδυμος testis; σπέρμα seed; χορδή cord.

Varieties.—Fibroma; enchondroma; osteoma; myoma; myxoma; lipoma; teratoma; dermoid cyst; cystic degeneration; carcinoma; sarcoma; calcification of the tunica vaginalis.

Treatment.—If the tumor does not yield rapidly to large doses of mercury and iodide, it is not syphilitic, and castration, together with excision, of the iliac glands should be resorted to.

No treatment is required for calcification of the tunica vaginalis.

Tumors of the Urethra.—Gr. οὐρήθρα. The diagnosis is made by endoscopy and the microscopical examination of excised portions of the growth.

(a) Papilloma or Polypus (occurring mostly in chronic gonorrhœal urethritis). If the growths are near the meatus, remove them through a urethral speculum with scissors, forceps, or snare, curette the base, and cauterize with silver nitrate or a saturated alcoholic solution of salicylic acid. The latter may be used twice a week, for a time, to prevent recurrence.

If the vegetations are deep in the urethra, employ the curette, or galvanocautery, or fulguration (see under Tumors of the Bladder) through the urethroscope, first anæsthetizing the urethra with novocaine, 1 per cent., or cocaine, 0.25 to 0.5 per cent., or quinine and urea hydrochloride, 5 per cent., freshly prepared (see under Drugs, Part 11).

(b) Angioma (extremely rare). Excise or destroy the growth with the thermocautery or high-frequency current.

(c) Cyst. Excise the cyst and cauterize the base.

(d) Fibroma (pedunculated). Curette away the growth.

(e) Calcification. Remove the scales periodically through the urethral speculum.

(f) Carcinoma (characterized by its hardness to the curette). Remove the penis and inguinal glands at once.

(g) Sarcoma. Remove the penis and inguinal glands at once.

Undescended Testicle.—L. *test'is* or *testic'ulus*. The undescended testicle is peculiarly liable to inflammation, atrophy, or malignant degeneration. If it has not descended spontaneously by the time of puberty, it should be brought down, if possible, by operative means. If it cannot be brought down, it should be replaced in the abdomen, or perhaps preferably, removed.

Uræmia.—See Part 1, General Medicine and Surgery.

Ureteral Calculus.—Gr. *οὐρητήρ* ureter; L. *calc'ulus* pebble. See Nephrolithiasis, in Part 1.

Urethral Angioma.—Gr. *οὐρήθρα*; *ἀγγεῖον* vessel + *-ωμα* tumor. See Tumors of the Urethra.

Calcification.—L. *calx*, lime + *fac'ere*, to make. See Tumors of the Urethra.

Calculi and Foreign Bodies.—L. *cal'culus*, pebble. If the stone is not firmly impacted, it may possibly be expelled by the patient closing the meatus with the fingers and bearing down, the urethra having first been filled with sterile oil. Or, if it is in the anterior urethra, the latter may be distended with sterile olive oil or liquid albolene, and an attempt made to milk the stone forward to the meatus, where it may be crushed and extracted, or meatotomy (see under Stricture of the Urethra) performed.

An impacted stone in the anterior urethra may be removed with long slender forceps, or pushed back into the deep urethra or bladder and removed by external urethrotomy or litholapaxy (see Vesical Calculus). A stricture may sometimes have to be divided before the stone can be extracted. "The penile or the scrotal urethra should not be incised for fear of fistula in the one case, infiltration in the other." (Keyes.)

Remove foreign bodies, if possible, by means of urethral forceps. Various scoops and forceps specially designed for this purpose are those of Collin, d'Etiolles, Thompson, Dittel, Mathieu, and Nélaton. If this is not practicable, external urethrotomy may be performed, or the foreign body may possibly be gently pushed into the bladder, and then extracted by means of the cystoscopic forceps.

A pin may be removed by grasping the head and forcing the point out through the corpus spongiosum, then reversing its direction and pushing the head out through the meatus, which is not difficult surgery.

Urethral Carcinoma.—Gr. *καρκίνος* crab + *-ωμα* tumor. See Tumors of the Urethra.

Chill; Catheter Fever.—Urethral or vesical instrumentation sometimes causes shock, chill, with or without fever, sepsis, or uræmia.

Prophylaxis.—During the two days preceding and following instrumentation, have the patient rest, preferably in bed, open his bowels, take a warm bath, drink large quantities of water, and take urotropine, gr. v–xx, t.i.d. The urethra or bladder may be irrigated daily with silver nitrate, 1 : 10,000, or potassium permanganate, 1 : 4000 or boric acid, ʒi–iv ad Oi, if deemed of importance. See under Gonorrhœa for the technic of irrigation.

Before introducing the instrument, have the patient empty the bladder, cleanse the parts with soap and water, and bichloride, 1 : 1000, and irrigate the urethra with one of the above antiseptic solutions. Then inject half a dram of a 5 per cent. emulsion of iodoform in glycerine (Beck's prophylactic injection), preceded, if deemed advisable, by one dram of cocaine solution, 2 per cent., to be retained five minutes, and then washed out with warm boiled boric acid solution.

Employ extreme gentleness in passing instruments, and afterwards irrigate the urethra and bladder.

Treatment.—Put the patient to bed, give a hot foot-bath, and employ diuresis and urinary antisepsis as above described. Should sepsis or uræmia supervene, institute free drainage by means of the retained catheter (see under Fistula, Urethral) for several days, with antiseptic irrigations; or by means of suprapubic or perineal cystostomy; and employ hot packs, hot-air baths, cups to the loins, stimulants, and if necessary, venesection and normal saline infusion (see Uræmia, in Part 1). If perineal cystostomy is done, introduce two rubber catheters, tied together, and irrigate with normal saline solution (ʒi ad Oi).

Urethral Cysts.—Gr. *κύστις* cyst. See Tumors of the Urethra.

Fibroma.—L. *fib'ra*, fibre + Gr. *-ωμα* tumor. See Tumors of the Urethra.

Fistula.—See Fistula, Urethral.

Urethral Foreign Bodies.—See Urethral Calculi and Foreign Bodies.

Hemorrhage.—Gr. *αἷμα* blood + *ῥηγνύναι* to burst forth. See under Stricture of the Urethra—under B, Treatment of Large Calibre Strictures.

Urethral Injuries.—See Injuries of Urethra.

Lubricants.—See Stricture of Urethra.

Urethra.

Papilloma.—L. *papil'la* + Gr. *-ωμα* tumor. See Tumors of the Urethra.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Urethra.

Spasm.—Gr. *σπασμός*. See Stricture of the Urethra.

Stricture.—See Stricture of the Urethra.

Tumors.—See Tumors of the Urethra.

Warts.—See Tumors of the Urethra.

Urethrismus.—L. See Stricture of the Urethra.

Urethritis.—Gr. *οὐρήθρα* urethra + *-ιτις* inflammation.

Etiology.—Gonorrhœa (*q.v.*); herpes progenitalis; chancroid; chancre; urethral wart or papilloma, or other form of neoplasm; animal parasites; unclean instrumentation; infections: typhoid fever, pneumonia, diphtheria, chronic tonsillitis, chronic eczema, syphilis, tuberculosis, etc.; traumatism; the retained catheter; menstrual and leucorrhœal discharge, and the discharge from malignant disease of the uterus; rectal worms; hyperacidity of the urine; gouty or rheumatic diathesis; diabetes; chronic constipation; irritating ingesta: alcohol, mineral waters, asparagus, ginger, arsenic, potassium iodide, turpentine, cantharides, etc.; sexual excess; prolonged sexual excitement; calculi or foreign bodies in the urethra; stricture; irritating injections, or the too energetic treatment of a chronic localized urethritis.

Non-gonorrhœal urethritis is rare as compared with the gonorrhœal form. It usually subsides under treatment in eight to ten days.

Treatment.—Attend to the cause. Treat the urethra with mild astringents (see under Gonorrhœa).

Urethrorrhœa.—Gr. *οὐρήθρα* urethra + *ῥοία* flow. See Sexual Neuroses.

Urethrospasm.—Gr. *οὐρήθρα* urethra + *σπασμός* spasm. See Stricture of the Urethra.

Urinalysis.—See Part 1, General Medicine and Surgery.

Urinary Alkalinity.—L. *uri'na;* Gr. *οὖρον*. See Alkalinuria in Part 1.

Calculus.—L. *calc'ulus*, pebble. See Nephrolithiasis, in Part 1.

Diminution.—See Anuria in Part 1.

Urinary Extravasation.—See Extravasation of Urine.

Incontinence.—See Enuresis.

Increase.—See Polyuria, in Part 1.

Infiltration.—L. *in*, into + *fil'trum*, filter. See Extravasation of Urine.

Retention.—See Retention of Urine.

Stone.—See Nephrolithiasis, in Part 1.

Urination, Absent.—See Anuria, in Part 1.

Difficult.—See Dysuria, in Part 1.

Diminished.—See Anuria, in Part 1.

Excessive.—See Polyuria, in Part 1.

Frequent.—See Polyuria, in Part 1.

Increased.—See Polyuria, in Part 1.

Painful.—See Dysuria.

Urine.—See Urinary.

Varicocele.—L. *va'rix*, vein + Gr. *κήλη* tumor. Dilatation, tortuosity and elongation of the veins of the spermatic cord (the pampiniform plexus), with a feel like a mass of angle-worms, almost invariably limited to the left side, and accompanied by a dragging pain.

Etiology.—Heredity; prolonged ungratified sexual desire; sexual excess; chronic constipation; protracted standing, sudden strain (coughing, etc.); pressure from an intra-abdominal growth, usually a renal malignant neoplasm.

Treatment.—Attend to the cause. Prescribe proper general and sexual hygiene, a suspensory bag, cold applications night and morning, adequate rest and exercise, fresh air day and night, a daily morning tepid bath before breakfast in a comfortable room, followed by a cold spinal douche, regulation of the bowels, regular hours of eating and sleeping; rest before and after meals, a bland, nutritious diet, and tonics. Reassure the patient. Marriage may be curative. (See also Neuralgia of the Testicle.)

If the above measures are insufficient, the pain and dragging very annoying, the patient much depressed, or the testicle beginning to atrophy, perform subcutaneous ligature; or Bevan's open resection operation, with abbreviation of the scrotum, if required (consult Keen's *Surgery*, Vol. IV, p. 613).

Venereal Warts.—L. *vene'reus*, pertaining to Venus. See Verrucæ, below.

Verrucæ; Warts.—L. *verru'ca*, wart.

Classification.—1. Ordinary wart or simple papilloma—verruca vulgaris.

2. Verruca acuminata; pointed condyloma; venereal wart; moist wart; fig wart; cauliflower excrescences; vegetations: skin colored, pink, or purplish red, finger-like vegetations, resembling cauliflower, cocks-comb, bunch of grapes, or mulberries. Causes: uncleanliness, irritating discharges, gonorrhœa, syphilis, etc.

3. Flat condyloma or moist papule of secondary syphilis—modified mucous patch: " soft, grayish, with a broad base."

Treatment.—1. VERRUCA VULGARIS.—Pick up the wart with toothed forceps, and cut off below the base with curved scissors, or better, a sharp knife. Suture the skin with catgut, or cauterize with pure carbolic acid or silver nitrate.

2. VERRUCA ACUMINATA.—Pick up the growths with toothed forceps, and excise with curved scissors or the knife. Cauterize the base with silver nitrate, nitric acid, or the thermocautery at a dull red heat, or close the wound with interrupted catgut sutures. Enjoin local cleanliness.

If excision is not feasible, have the patient cleanse the parts daily with soap and water, followed by a solution of potassium permanganate, 1 : 2000, or bichloride, 1 : 2000, or salicylic acid, 5 to 10 per cent. in equal parts of alcohol and water; then dry, and apply an astringent, antiseptic dusting powder of calomel and salicylic acid, aa; or zinc oxide and bismuth subnitrate, aa; or tannic acid and lycopodium, aa; or alum, gr. v–l to the ounce of boric acid; or resorcin, eight parts, bismuth subnitrate and boric acid, aa one part (Boeck). If this plan fails, curette the growths and apply, cautiously, glacial acetic acid, chromic acid, nitric acid, or lactic acid, the surrounding skin being protected with vaseline. Or, freeze the growths once or twice with a stream of ethyl chloride, protecting the surrounding skin with dry cotton. "The most valuable local application," says Keyes, is a 10 per cent. mixture of salicylic acid in acetic acid (not glacial). "It forms a chalk-and-water mixture of which the moist chalk is smeared over the warts." "One or two applications cause the growths to wither away and drop off."

3. CONDYLOMA SYPHILITICA.—Employ local antisepsis and specific internal medication (see Syphilis, in Part 1.).

Vesical Affections.—L. *vesi'ca*, bladder. See Bladder Affections.

Vesicular Tuberculosis.—See Tuberculosis of the Seminal Vesicles.

Vesiculitis.—See Seminal Vesiculitis.

Visceroptosis.—L. *vis'cus*, viscus + πτῶσις fall. See Splanchnoptosis, in Part 1.

Warts, Muco-Cutaneous.—L. *mu'cus*, mucus; *cu'tis*, skin. See Verrucæ.

Warts, Urethral.—See Tumors of the Urethra.

Venereal.—L. *vener'eus*, pertaining to Venus. See Verrucæ.

Wounds.—See Injuries.

APPENDIX

Schema for the Genito-Urinary History and Examination

Name *Address* *Date* *No.*
Single, married (how long), *widower* (how long) *Occupation*
Children *Age* *Race*
Frequency of micturition (diurnal, nocturnal, or constant)
Changes in the Urinary stream *General appearance*
Pain *Height* *Weight*
Hæmaturia *Appropriate or proper weight* (see Part 1)
Complaint
To what does patient attribute his illness:

Hygiene: Rest Exercise
Recreation Diet Sleep
Bowels Ventilation Baths
Sexual habits Tea and coffee
Narcotics Alcohol Tobacco

History of present illness:

Previous History:
Family and wife's history:
Examination:
Kidneys Ureters Bladder
Penis Urethra Testis
Vas Deferens Prostate Seminal Vesicles
Rectum Abdomen
Heart, blood-vessels, lungs, and other organs and tissues.
Urinary Analysis (*q.v.* in Part 1). Amount in 24 hours Frequency
Color Reaction s.g. Total solids
Urea Albumen Sugar Sediment
Renal function
Diagnosis:
(On other side) *Treatment* (including dates, and whether at office or home).

The Genito-Urinary Armamentarium.

1. Office and Operating Room Equipment.—Examining and operating table; stands; basins; pitchers; Rochester sterilizer for dressings; instrument sterilizer (fish kettle); dressing material: plain and iodoform gauze, absorbent cotton, gauze bandages, towels; rubber sheets; douche pan; Kelly pad; rubber gloves; operating gowns; caps; nose and mouth protectors; laparotomy and other sheets; sheet with perforation for the penis; adhesive plaster; safety pins; hand brushes; finger cots; reservoir with tubes and stand; soap; laparotomy pads with tape attached; suture material: silkworm-gut, catgut plain and chromicized, silk, linen thread; safety razor; Esmarch inhaler; tongue forceps; electric light furnished by street current or storage battery; hypodermic syringe and tablets (morphine, strychnine, atropine, digitalin); hot water bags.

Instrument cases containing the following: Pedicle needle; knives; scissors, blunt and pointed, straight and curved; thumb forceps; rat-toothed dissecting forceps; tissue clamps, straight and curved; artery forceps; needle holders; assorted needles; abdominal retractors; proctoscopes; sigmoidoscopes; long rectal alligator forceps; Kelly's conical sphincter dilator; graduated rectal bougies; rectal tube and funnel; urethroscope, anterior and posterior; Pezzer self-retaining catheters; long-nozzle drainage syringe; glass and rubber drainage tubes; Moynihan's intestinal clamps; Murphy's buttons; Paquelin cautery; electro cautery; head mirror; infusion apparatus; minim graduate; medicine droppers, straight and curved; applicators; long, narrow-bladed volsellum forceps; snare; Sym's rubber bag retractor; varicocele needle; circumcision forceps; lithotomy forceps; lithotomy scoop; grooved urethral staff; sharp-pointed curved perineal tube; grooved director; bistoury; female catheter; Luy's urine separator or segregator; Kemp or Chetwood double-way rectal tube; wire urethral speculum; Young's prostatic tractor; Nelaton soft rubber catheters, full set; woven, olivary, elbowed, double-elbowed, and olive-tipped elbowed catheters, full set; Guyon elbowed obturator, for use in a flexible rubber or woven catheter, to pass an enlarged prostate; silver catheters, tunnelled or threaded (for attachment to filiforms); set of whalebone filiform bougies and tunnelled sounds; set of Janet sounds and filiforms; Banks bougies, full set; set of olive-tipped conical woven bougies; set of bulbous bougies, flexible or metallic; set of double-taper, conical, steel urethral sounds, with Thomson curve; Kollman or Oberländer dilator; Keyes instillator; Young's or Rob-

bin's ointment applicator; urethrotome; two-dram, blunt-nozzled glass syringe; Janet or Heyden syringe (keep rubber piston out of barrel when not in use); glass fountain syringe with rubber tube and blunt nozzle for urethral irrigations; irrigating operating cystoscopes and accessories, such as ureteral forceps, scissors, dilators, catheters, bougies, and searchers; stone searcher; Chetwood urethral clip; suspensory bags; glass or hard rubber hand syringe holding not over four drams; Keyes-Ultzmann syringe; urethral applicator for use through endoscope; Guyon instillating syringe; Otis-Kreisl urethrotome; Kollmann intra-urethral probe; intra-urethral curette; intra-urethral snare; Ultzmann's instillator; Kollmann's capillary aspirator; Kollmann's cannula and syringe; Kollmann's or Oberländer's electrolytic needles; Kollmann's or Bierhoff's knife; Janet's trajectome; curved bistoury; Otis dilating urethrometer; Janet-Guyon, Gross, Le Fort, or Thompson dilators, various sizes; Maisonneuve's urethrotome; Fought's flexible whip bougies with metal shaft attachment; grooved urethral staff; two flexible silk catheters, one terminating in an oval tip, and the other in a rat-tail extremity; glass four-ounce syringe; wire stylet to render rubber catheters firm; tape; Horwitz urethrotome for filiform strictures; Porgés coudé gum catheters, various sizes; silk-web catheter with Mercier's or Guyon's curve; English semihard catheters; Guyon's mandarin coudé catheter; silver catheters with large prostatic curve, up to Brodie's curve; aspirating needles for tapping the bladder suprapubically; Casper's self-retaining catheter closed with a cork; Young's modification of Bottini's instrument; metal double-current irrigating catheter; suprapubic bladder drainage tube; Bransford Lewis operating cystoscope; two-way glass syringe of 15 c.c. capacity for connection with ureteral catheter; Thompson's stone searcher; Bigelow or Chismore lithotrite and evacuator; Thompson's lithotrite; Guyon's lithotrite; cystoscopic alligator forceps; bladder hooks; urethral forceps; bladder scoops and forceps for extracting foreign bodies (Collin, d'Etiolles, Thompson, Dittel, Mathieu, and Nélaton); fulguration catheter; urethral scissors, forceps, snare, curette, galvano-cautery; Bloodgood bag for suprapubic drainage of bladder; Earle's or Collin's urinal; Martin's epididymitis bag (made by Lentz and Sons, of Philadelphia); Chetwood's rubber bandage; gutta-percha tissue; half-ounce aspirating syringe for tapping hydrocele; cannula and trocar for tapping hydrocele; Felecki's instrument: smooth metal bulb mounted on a handle, for stripping the seminal vesicles per rectum; rectal thermophore; urethral psychrophore (double catheter); camel's-hair brushes; silver urethral probe; No. 4 or 5 American catheters for children; Gross's blood catheter; glass syringe with long needle for intramuscular injections; salvarsan outfit: (see Syphilis, in Part 1).

X-ray machine; electrical outfit: static electricity, galvanic, faradic, sinusoidal, and high-frequency currents; blood-pressure apparatus; stethoscope; portable vapor bath cabinet.

Ionic outfit: galvanic battery with milliampèremeter, copper and zinc electrodes, urethral rods introduced through a cannula, fine lint to wrap the rods. Hot air apparatus.

Metal instuments are sterilized by boiling in sodium carbonate solution (washing soda) 1 per cent., for five minutes. Woven instruments may be boiled in plain water, but they should not lie in contact with other instruments while boiling, nor be touched until cooled. Operating cystoscopes are sterilized, after taking apart and cleansing with green soap and water, in an air-tight cabinet for one hour with formaldehyde gas generated by the Lowe disinfecting lamp; or else by immersing all but the eye-piece in alcohol.

2. Laboratory Equipment.—Microscope; slides; cover-glasses; stains: saturated aniline water, filtered; saturated alcoholic solution of gentian violet; iodine; potassium iodide; alcohol, 95 per cent.; safranin. Alcohol lamp or bunsen burner; drug scales; spatulas; mortar and pestle; capsules.

Urinary analysis outfit: (see Part 1).

3. Internal Drugs Mentioned in the Text.—

(a) ANTILEUTICS. Gr. *ἀντί* against + L. *lu'es*, syphilis or the plague.—Salvarsan; neosalvarsan; protiodide of mercury: Garnier and Lamoureux's granules of green protiodide, gr. ¼; biniodide of mercury; bichloride of of mercury; salicylate of mercury; oleate of mercury; tannate of mercury; black wash; gray powder; blue pill; blue ointment, 50 per cent.; mercury vasogen; white precipitate ointment; potassium iodide; comp. syrup of sarsaparilla.

(b) URINARY SEDATIVES AND ASTRINGENTS. L. *sedo*, I allay; *ad.* to + *string'ere* to bind.—Ol. santali; oleoresina copaibæ; oleoresina cubebæ; inf. uva ursi; inf. buchu; inf. pareira brava; alchemilla; fl. ext. zea maïs; fl. ext. triticum repens; rhus aromatica.

(c) DIURETICS. Gr. *διούρησις* urination.—Potassium citrate, acetate, and bicarbonate;

infusion and oil of juniper; inf. buchu; spt. ætheris nitrosi; tr. cantharides.

(d) URINARY ANTISEPTICS. Gr. *ἀντί* against + *σήψις* putrefaction. — Methylene blue; urotropine; cystogen; formin; helmitol; saliformin; ol. eucalypti; salol.

(e) URINARY ACIDIFIERS.—Acid sodium phosphate; sodium benzoate; benzosol; benzoic acid; salicylic acid; sodium salicylate.

(f) ANTILITHICS. Gr. *ἀντί* against + *λίθος* stone.—Piperazin; dilute nitric acid; dilute nitromuriatic acid; magnesia; ammonium carbonate; dilute hydrochloric acid; liquor potassæ; borocitrate of magnesium; sodium bicarbonate; Vichy; Apollinaris; colchicum.

(g) NEUROMUSCULAR SEDATIVES.—Ether; chloroform; morphine; codeine; heroin; dionin; tr. opii; ext. opii; tr. hyoscyami; ext. hyoscyami; morphine and atropine hypodermic tablets; tr. belladonna; ext. belladonna; whiskey; sodium, potassium, and strontium bromides; chloral; phenacetin; antipyrine; pyramidon; salophen; salipyrine; ext. and tr. cannabis indica; trional; valerian; asafœtida; spt. ætheris comp.; atropine.

(h) LAXATIVES.—Calomel; pulv. rhei; cascara; senna; sodium sulphate; Rochelle salt; Epsom salt; sodium phosphate; Hunyádi; Friedrichshall.

(i) TONICS AND ALTERATIVES.—Quinine; tr. cinchona; dilute hypophosphoric acid; syr. hypophosphites; glycerophosphates; elixir ferri, quin., et strych. phos.; ferrum reductum; peptomanganate of iron; irontropon; Fowler's solution; sodium arsenate; tr. nucis vomicæ; strychnine; phosphorus; zinc phosphide; codliver oil; maltine; tr. gentian.

(j). HÆMOSTATICS Gr. *αἷμα* blood + *στατικός* standing.—Adrenalin solution, 1 : 1000; dilute or aromatic sulphuric acid; fl. ext. senecio aureus; stypticin; ergot; gelatine, Merck's sterilized; fl. ext. hydrastis.

(k) MENSTRUA AND FLAVORS.—Saccharum album; elixir simplex; syr. simpl.; syr. acaciæ; syr. and aq. cinnamomi; aq. anisi; mucil. acaciæ; glycerine; tragacanth; syrup of orange peel.

4. Local Preparations Mentioned in the Text.—

(a) ANTISEPTICS AND ASTRINGENTS.—Liq. plumbi subacetatis dil.; argyrol; protargol; silver nitrate; zinc sulphate; zinc chloride; tr. krameria; tr. myrrh; tr. iodi; glycerite of tannin; fl. ext. krameria; carbolic acid; boroglyceride, 25 per cent.; hydrogen peroxide; alcohol; creolin; lysol; ichthalbin; liq. alum. acetatis; bichloride of mercury; comp. stearate of zinc.; dermatol; tannin; borax; boric acid; bismuth subnitrate; lead acetate; iodipin; europhen; hydrastin (Lloyd's); ichthyol; potassium permanganate; alum; iodine; iodoform; copper sulphate; salicylic acid; glutol; hydrarg. oxycyanate; resorcin; camphoric acid; calomel; aristol; iodol; nosophen; merc. ointment; iodine-vasogen; ichthyol ointment; zinc sulphocarbonate; carbolic ointment; blue ointment; comp. iodine ointment; silver stick; lactic acid; nitric acid; acetic acid; chromic acid; liq. hydrargyri nitratis; comp. tr. benzoin; pot. chlorate; collargol; Dobell's or Seiler's alkaline solution.

(b) EMOLLIENTS AND PROTECTIVES L. *emol'lio*, I soften.—Zinc ointment; boric ointment; cold cream; petrolatum molle; lanolin; olive or cottonseed oil; oil of sweet almond; liquid cosmoline or liquid vaseline or liquid albolene; oleic acid; ol. theobromæ; lycopodium; talcum; starch.

(c) LUBRICANTS.—Lubrichrondrin; synol soap; boroglyceride:

℞ Hydrargyri oxycyanati..... gr. iiiss
Glycerini..... ℥vss
Tragacanthæ..... gr. xlvi
Aquæ destillatæ sterilisatæ..... ℥iii (Casper)

(d) LOCAL ANALGESICS Gr. *ἀν* without + *ἄλγος* pain.—Cocaine, novocaine, eucaine; alypin; camphor; ethyl chloride; tr. aconiti. ung. belladonnæ; lead and opium wash; Sterile 5 per cent. alypin lubricant, 5 to 7c.c. instilled with a Keyes instillator, produces anæsthesia in ten minutes which lasts about thirty minutes.

Miscellaneous.—Oxygen tank; coumarin; salt; collodion; normal sodium hydrate solution; flaxseed; distilled water; guaiacol; creosote (Beechwood); guaiacol valerianate; thallin sulphate; gomenol oil; ol. origanum; indigo carmine, 4 per cent. in salt solution, boiled two hours; phloridzin, 1 per cent. in 33 per cent. alcohol.

PART 4

OBSTETRICS

Abderhalden Test.—See Diagnosis of Pregnancy.

Abdomen, Pendulous.—L. *ab'dere*, to hide; *pend'ulus*, hanging.

Causes.—Antedisplacment of the pregnant uterus (*q.v.*); relaxed abdominal walls; diastasis of the recti muscles (*q.v.*); kyphosis, causing a diminution in length of the abdominal cavity; lack of engagement, due to contracted pelvis, etc. (See Dystocia.)

An abdominal supporter should be worn.

Abdominal Cæsarian Section.—See Cæsarian Section.

Abdominal Diastasis.—See Diastasis of the Abdominal Muscles.

Abdominal Distention.—See Tympanites.

Abdominal Muscles, Diastasis of the.—See Diastasis of the Abdominal Muscles.

Abortion.—L. *ab*, from + *ori're*, to grow. See Abortion, Miscarriage, and Premature Labor, in Part 2, Gynæcology.

Abortion, Induction of.—L. *indu'cere*, to lead in. The artificial termination of pregnancy before the twenty-eighth week or sixth month, *i.e.*, before the viability of the fœtus, or its ability to live after birth.

Indications.—Intractable vomiting (*q.v.*); marked renal insufficiency (see Toxæmia); persistent excessive jaundice; acute yellow atrophy of the liver; serious exophthalmic goitre; serious cardiac insufficiency; pulmonary tuberculosis; spontaneous or induced onset of abortion with persistent hemorrhage or with infection; missed abortion; intrauterine infection; acute hydramnios; hydatidiform mole.

Technique.—See under Abortion, Miscarriage, and Premature Labor, in Part 2, Gynæcology.

Abruptio Placentæ.—L. *ab*, from + *rup'tura*, break. See Premature Separation of the Normally Situated Placenta.

Abscess, Bartholin's Gland.—L. *absceśsus*, a going apart; *glans*, a cord. See Vulvitis, in Part 2, Gynæcology.

Breast.—See Mastitis.

Skene's Glands.—See Gonorrhœa; and Vulvitis; in Part 2, Gynæcology.

Submammary.—L. *sub*, under + *mam'ma*, breast. (See Mastitis.)

Suburethral.—L. *sub*, under + Gr. *οὐρήθρα* urethra. See Gonorrhœa, and Vulvitis; in Part 2, Gynæcology.

Vulval.—L. *vul'va*. See Vulvitis, in Part 2, Gynæcology.

Accidental Complicating Diseases of Labor.—See Complications of Labor.

Pregnancy.—See Complications of Pregnancy.

Accouchement Forcè.—Fr. *forcible* artificial delivery. See under Premature Labor, Induction of.

Achondroplasia.—See Part 1, General Medicine and Surgery.

Acid Eructations.—L. *a'cidus*, sour; *eructa'tio*, belching. See Dyspepsia Complicating Pregnancy.

Acromio-Iliac Presentations.—Gr. *ἄκρον* point + *ὦμος* shoulder; L. *il'ium*, haunchbone. See Transverse Presentations.

Acute Yellow Atrophy of the Liver.—See Part 1, General Medicine and Surgery.

Adherent Placenta.—L. *adhær'ere*, to stick to; *placen'ta*, a flat cake. The diagnosis is made by the association of alarming hemorrhage with inability to express the placenta by Credé's method. The hemorrhage is due to the fact that a part of the placenta is usually detached.

Frequency.—about 1 : 312 (Hirst).

Etiology.—Endometritis; syphilis.

Treatment.—The third stage of labor is conducted as follows: After the fundus uteri has risen up to or above the umbilicus, indicating the expulsion of the placenta into the lower uterine segment, or after the lapse of thirty minutes, or at once in the event of alarming hemorrhage, attempt to express the placenta by Credé's method, as follows: Grasp the uterus, with the fingers posteriorly and the thumb anteriorly, and knead and rub until it contracts strongly; then, while it is contracting, squeeze it and press down in the direction of the axis of the superior strait. Persist in Credé's manœuvre at intervals for two hours, or longer if necessary, unless there is alarming hemorrhage, before resorting to manual removal of the placenta.

The use of pituitrin (*q.v.* in Part 11) may replace Credé s manœuvre and produce prompt expulsion of the placenta.

If manual removal is demanded, proceed as follows: With one hand over the fundus, insert the other hand, under strict asepsis, along the cord as a guide, seek a detached edge of the placenta, under which insert the fingers, and separate the placenta by sawing with the fingers from side to side. It may be necessary to "pinch through dense

adhesions with the thumb and forefinger." After the placenta has been detached, squeeze the uterus from the outside, and allow the "uterine contractions to expel the hand and the contained placenta," to avoid inversion of the uterus (Hirst). Irrigate the uterine cavity thoroughly with hot normal salt solution (℥i ad Oi) after introducing the hand.

If it is impossible to detach the placenta, which is extremely rare, pack the uterus with gauze. On removing the latter at the end of twenty-four hours, the placenta may come away. (Ahlfeld, quoted by Hirst).

Adynamic Diseases Complicating Labor.—Gr. *a* priv. + *δύναμις* might. Employ active stimulation during the first stage of labor in order to prevent shock (*q.v.*). As soon as the os is dilated to the size of a silver dollar, apply forceps (*q.v.*), or perform internal podalic version (*q.v.*), and hasten dilatation of the cervix by occasional judicious traction, and extract the child as soon as the cervix is practically completely dilated. Be very careful not to tear the cervix by injudicious traction upon the child.

After-Pains, Severe.—

Causes.—Precipitate labor; overstretching of the uterine musculature due to prolonged labor, twins, or hydramnios; retention of blood-clots or portions of the placenta; suckling infant.

Treatment.—If the uterus appears, from its size, to contain much clotted blood, employ Credé's method of expulsion. Grasp the uterus with the fingers posteriorly and the thumb anteriorly, and knead and rub until it contracts strongly; then, while it is contracting, squeeze it and press down in the direction of the axis of the superior strait. Then prescribe fluid extract of ergot, ℥ss–i, with tincture of opium ♏x, or paregoric, ℥ii, or morphine, gr. ⅛–¼, with atrophine, gr. $\frac{1}{150}$ every four to six hours, as required, together with very hot, frequently changed, wet compresses to the lower abdomen.

As a rule, the after-pains diminish appreciably after twenty-four hours.

Agalactia.—Gr. *a* neg. + *γάλα* milk. See Milk Secretion, Deficient.

Age of Fœtus, Calculation of.—L. *fœ'tus*. See Stage of Pregnancy.

Albuminuria.—Albumin, from L. *alb'us*, white + Gr. *οὖρον* urine. For tests, see Urinalysis, Part 1. Slight albuminuria is common during pregnancy, and in itself is of no serious significance. In large amounts it is an important symptom of toxæmia (*q.v.*).

Alkalinuria.—See Part 1, General Medicine and Surgery.

Amaurosis During Pregnancy.—L. from Gr. *ἀμαυρόειν* to darken: blindness. See Paralyses Complicating Pregnancy.

Amblyopia During Pregnancy.—Gr. *ἀμβλύς* dulled + *ὤψ* eye: dimness of vision. See Paralyses Complicating Pregnancy.

Amenorrhœa.—Consult Part 2, Gynæcology.

Anæmia Complicating Pregnancy or the Puerperium.—Gr. *ἀν* neg + *αἷμα* blood. Associated symptoms include breathlessness, dizziness, imperfect vision, arterial throbbing, perhaps œdema of the legs, perhaps nervous manifestations. (For blood tests, see Blood Examination, in Part 1, General Medicine and Surgery.)

The Prognosis is usually good.

Treatment.—Rest, fresh air and sunlight, and a nutritious, easily digestible diet are the chief requisites: fresh beef juice, finely minced meat, bovinine, vinsip, ferroglidine, iron somatose, blood, fish, raw oysters, bone-marrow, eggs, milk, carbohydrates (oatmeal or wheat gruel), vegetables in purée form (spinach, lentils, beans, peas, asparagus), apple sauce, strawberries. If the stomach is in good condition, and fever and tuberculosis are absent, iron may be prescribed. Arsenic may also be of value, except in nephritis.

℞ Pil. ferri carbonatis (Blaudii)..... gr. v
Recent. præparat. pulv. in caps., No. 100.

Sig.—One pill t.i.d., p.c. increased by one pill each week until three or four or five pills are taken t.i.d. (To prevent gastric solution and irritation the powder may be dispensed in gelatine capsules hardened with formalin; Sahli's glutoid capsules, grade II of hardness.)

℞ Liquoris ferri et ammonii acetatis
(Mist. Bashami), recent. præparat. ℥viii

Sig.—One ounce t.i.d., in water. (Used in nephritis because of its diuretic and diaphoretic properties.)

℞ Ferri albuminatis..... gr. x–xxx–℥ii
Dent. tal. caps. No. 20.
Sig.—One capsule t.i.d.p.c.

℞ Liquoris potassii arsenitis..... ℥ss

Sig.—Two drops, well diluted, t.i.d.p.c., gradually increased by three to five drops every five or six days, up to 10 to 15 to 20 to 25 drops t.i.d. (Consult Part 11, for toxic symptoms; also for other preparations of iron and arsenic.)

If the anæmia is of the pernicious type, and is growing progressively worse in spite of treatment, induce premature labor (*q.v.*).

Anorexia Complicating Pregnancy.—Gr. *ἀν* without + *ὄρεξις* appetite. Regulate the bowels and prescribe a bitter tonic:

℞ Tr. nucis vomicæ... ℥i (♏x per dose)
Tr. cinchonæ comp.. ℥xi
M. Sig.—Two teaspoonfuls t.i.d. (S. Theobald.)

℞ Tincturæ rhei aromatici..... ʒiiss (ɱx per dose)
Tincturæ nucis vomicæ..... ʒiii–iv (ɱxii–xvi per dose)
Tincturæ gentianæ compositæ..... ʒiss
Tincturæ aurantii amaræ, q.s. ad... ʒiv
M. Sig.—Two teasp. in water, shortly before meals (Modification of Huchard's formula).

℞ Tr. nucis vomicæ... ʒv (ɱx per dose)
Tr. gentianæ comp., q.s. ad..... ʒiv
M. Sig.—A teasp. in a quarter glass of water, t.i.d.a.c.

Anteflexion of the Pregnant Uterus.—L. *ańie*, before + *flex'io*, bend. See Displacements of the Pregnant Uterus.

Ante-partum Hemorrhage.—See Hemorrhage, Ante-partum.

Anterior Fontanelle Presentations.—L. *ańte*, before; Fr. *fontanelle*, little fountain. See Bregma Presentations.

Anterior Parietal Bone Presentations.—L. *pa'ries*, pl. *pariétes*, wall. See Ear Presentation.

Anteversion of the Pregnant Uterus.—L. *ańte*, before + *ver'sio*, a turning. See Displacements of the Pregnant Uterus.

Anuria.—Gr. *ἀν* neg. + *οὖρον* urine. See the Toxæmias.

Aphasia.—Gr. *α* priv. + *φάσις* speech. See Paralyses Complicating Pregnancy.

Appendicitis Complicating Pregnancy.—L. *appeńdix*, from *append'ere*, to hang upon + Gr. *-ιτις* inflammation. Treat the condition according to indications, irrespective of the existence of pregnancy (see Appendicitis, in Part 1, General Medicine and Surgery).

Armamentarium.—L. See the Appendix, following Part 4.

Arm, Backward Displacement of an.—This condition interferes with delivery and is diagnosed by passing the hand above the head.

Treatment.—In cephalic presentations, if the arm can not be replaced manually, try to deliver the child by moderate traction with forceps. If this is impracticable, perform internal podalic version (*q.v.*)

In breech presentations, bring down the non-displaced arm and attach a sling to it; then by traction upon this arm and rotation of the trunk it may be possible partially to disengage the displaced arm; then with the whole hand in the pelvis, replace the arm completely. In breech presentations, of course, the child should be extracted as expeditiously as possible to prevent its asphyxiation, and to this end it may be necessary deliberately to fracture the arm. (Edgar.)

Arm, Displacement, Dorsal, of an.—L. *dor'sum*, back. (See Arm, Backward Displacement of an, above.)

Dorsal Displacement of an.—(See Arm, Backward Displacement of an, above.)

Prolapse of an.—L. *pro*, before + *la'bi*, to fall.

Etiology.—Pelvic contraction; shoulder, brow, or face presentations; pendulous abdomen; premature fœtus; dead fœtus; tumor; hydramnios; twins; "rupture of the membranes in the sitting or standing posture, especially in multiparæ"; "sudden exertion on the part of the mother during or even after engagement." (Edgar.)

Treatment.—It requires correction only in cephalic presentations, not in shoulder or breech presentations, in which it is "a rather favorable condition." (Edgar.)

If the prolapse is observed when the head is not yet engaged, postural reposition may be attempted by placing the patient in the Trendelenberg or knee-chest position; but manual reposition will probably be required. If the latter fails, one may resort to version and extraction (see Podalic Version).

If the head is already engaged, leave the case to nature, and if labor is delayed, apply forceps and extract the head, while moderate traction with a sling is made upon the arm.

In shoulder and breech presentations, secure the prolapsed arms with a sling, to prevent their extension and the consequent danger of impaction of the after-coming head. (Edgar.)

Artificial Infant Feeding.—L. *ars*, art + *fa'cere*, to make. See Infant Feeding, in Part 1, General Medicine and Surgery.

Respiration.—L. *respira'tio*. See Asphyxia Neonatorum.

Asepsis.—Gr. *α* priv. + *σῆψις* decay. The strictest asepsis should be observed in all intra-vaginal manipulations. The vulval hair should be cut short with scissors, or better, shaved off by means of a safety razor. The external genitalia and neighboring skin should be cleansed thoroughly with castile or green soap and hot water, rinsed, and douched with bichloride solution, 1 : 2000.

The vagina should be thoroughly cleansed with soap and hot water and rinsed, followed by bichloride solution, 1 : 4000, or hot water.

The finger nails should be cut, and the hands scrubbed with brush, soap, and hot water, and soaked in hot bichloride, 1 : 1000, both before and after cleansing the patient. Rubber gloves are best worn.

Then the lower limbs and abdomen are covered with sterile sheets, exposing only the vulva. Where only an examination is to be made, the sterile sheets, are of course, unnecessary. The examining fingers may be anointed with soft vaseline that has been boiled in a tin salve-box on the kitchen stove.

Asphyxia Neonatorum.—Gr. *a* priv. + *σφύξις* pulse; *νέος* new + L. *na'tus*, born.

Etiology.—Maternal convulsions; hemorrhage; prolonged second stage of labor; tetanic contraction of the uterus; the use of ergot in the second stage; grave systemic disease in the mother; death of the mother; compression of the cord; syphilitic periphlebitis of the cord; multiple coils of cord about the neck; premature separation of the placenta; birth with unruptured membranes; precipitate labor; prenatal respiration; brain compression; congenital respiratory, circulatory, or brain malformation or disease; laying the infant in an improper position.

Cerebral hemorrhage (*q.v.*) is diagnosed by the presence of a bulging fontanelle, coma, and possibly paralysis.

The signs of intra-uterine asphyxia are the escape of meconium in vertex presentations, and a fetal pulse rate below 100 or above 160.

Treatment.—See Asphyxia, in Part 1, General Medicine and Surgery.

Asthma Complicating Pregnancy.—Gr. *ἄσθμα* panting. Consult Asthma in Part 1, General Medicine and Surgery.

If the dyspnœa is extreme, pregnancy may have to be terminated (see Premature Labor, Induction of).

Atelectasis in Infants.—See Part 1, General Medicine and Surgery.

Atony of the Uterus.—Gr. *a* priv. + *τόνος* tone. See Inertia Uteri.

Atresia of the Cervix Causing Dystocia.—Gr. *a* neg. + *τρήσις* a boring; L. *cer'vix*, neck; Gr. *δυς-* ill + *τόκος* birth.

A. Imperforate Os.—Perforate the cervix during labor, at the site of the external os, with the finger or uterine sound, or make crucial incisions. Dilatation then usually proceeds rapidly. Bleeding points may be closed by suture after labor.

B. Cervical Stricture.—Causes.—Pressure necrosis and sloughing from a previous labor; action of caustics; inflammation from an ill-fitting pessary; ulceration or pressure in cancer; ulceration in scarlet fever, smallpox, diphtheria, syphilis, gonorrhœa, etc.; "too tight closure in the operation for cervical laceration"; myoma.

Treatment.—Dilatation usually progresses well enough and may be aided, if need be, by means of hydrostatic dilators (see Premature Labor, Induction of). In some instances it may be necessary to make radiating incisions with scissors or a probe-pointed bistoury, or even to perform Cæsarian section (*q.v.*).

C. Cervical Rigidity. I. Functional or Spastic Rigidity.—Causes.—Primiparity in elderly women; painful uterine contractions; dry labor, due to premature rupture of the membranes; difficult labor; pre-existing cervicitis; distended bladder; distended rectum.

Treatment.—Administer nerve sedatives in order to relax the muscular spasm, *e.g.*, chloral hydrate, gr. xv–xx, well diluted, per rectum, repeated every twenty minutes, up to maximum of 50 grains; morphine, gr. ¼; cocaine, 10 per cent. solution, applied to the cervix for a few minutes; copious warm douches directed against the cervix every fifteen minutes; chloroform or ether inhalations. If these fail, resort to manual, bimanual, instrumental, or hydrostatic dilatation, and finally, incisions (see Premature Labor, Induction of).

II. Organic Rigidity.—Causes.—Congenital elongation of the cervix; cervicitis and endocervicitis; cervical hypertrophy; cervical adhesions; cervical deviations; anterior, posterior, or lateral; tumors.

Treatment.—If dilatation shows no progress after the administration of sedatives, insert the finger, and if the os is deviated from its usual position, hook a finger into it during a pain and try to draw the cervix into its proper position. If adhesions are found to exist between the cervix and membranes, detach them, and failing in this, puncture the membranes. If other measures fail, resort to manual, bimanual, instrumental, or hydrostatic dilatation, and finally, incisions (see Premature Labor, Induction of).

Atresia of the Vagina and Vulva Causing Dystocia.—Gr. *a* neg. + *τρήσις* a boring; L. *vagiña*, sheath; *vul'va*, vulva; Gr. *δυς-* ill + *τόκος* birth.

Causes.—Unruptured hymen; congenital narrowing; vaginismus; vaginal septa; cicatricial adhesions; tumors (fibroma, fibromyoma, cysts, sarcoma, carcinoma); hæmatoma; abscess of Bartholin's gland.

Treatment.—Incise an unruptured hymen. In congenital narrowing of the vagina and vulva, hydrostatic dilators (see under Premature Labor, Induction of), may be useful; multiple incisions are rarely required. For vaginismus or muscular spasm, employ sedatives (see under Atresia of the Cervix).

Divide unyielding longitudinal or transverse septa; they show little tendency to bleed. Stretch adhesions with the hand or with instrumental or hydrostatic dilators, or make multiple incisions; extract the child with forceps; Cæsarian section may be required. Incise and evacuate cysts (or snip off the superficial portion of the sac with scissors and touch the base with pure carbolic acid). Incise and evacuate hæmatomata, and check hemorrhage by packing with gauze; the excision of growths is apt to be attended by severe hemorrhage; Cæsarian section may be required. Incise a vulvar abscess early in the first stage of labor, curette, swab with carbolic acid, and pack with iodoform gauze.

Atresia of the Vulva Causing Dystocia.—See Atresia of the Vagina and Vulva causing Dystocia.

Atrophy of the Liver, Acute Yellow.—See Acute Yellow Atrophy of the Liver, in Part 1.

Baby, Care of the.—See under Management of the Puerperium.

Diet of the.—See Infant Feeding, in Part 1.

Diseases of the New-Born.—See Diseases of the New-Born Infant.

Dress of the.—See under Management of the Puerperium.

Feeding of the.—See Infant Feeding, in Part 1.

Giant.—See Child, Large.

Large.—See Child, Large.

Baby's Outfit.—See under Management of Pregnancy.

Backward Displacement of an Arm.—See Arm, Backward Displacement of an.

of the Uterus.—See Displacements of the Uterus.

Bags, Dilating.—See under Premature Labor, Induction of.

Bartholinitis.—See Vulvitis, in Part 2, Gynæcology.

Belching, Acid.—See Dyspepsia Complicating Pregnancy.

Binder, Breast.—See under Caked Breasts.

Bipolar Version of Braxton Hicks.—See Cephalic Version.

Birth Palsies.—See Part 1, General Medicine and Surgery.

Bladder-Calculus.—L. *calculus*, pebble. If the stone is large, remove it per urethram or per vaginam during the last month of pregnancy (see Vesical Calculus and Foreign Bodies, in Gynæcology, Part 2).

Bladder Irritability.—L. *irrit'are*, to tease. The frequency of micturition or incontinence which occurs during the early months of pregnancy and is due to pressure from the enlarging uterus, is relieved by the middle of the fourth month, but reappears by the end of the seventh month, due then to the weight of the fœtus. In the latter instance it is usually relieved by an abdominal supporter. Rest upon the back and the knee-chest posture should also afford relief. Any abnormality of position or presentation of the fœtus or uterine displacement should be corrected. (Consult Bladder Irritability, in Part 2, Gynæcology, for other causes.)

Bladder-Stone.—See Bladder Calculus, above.

Bleeding.—See Hemorrhage.

Blindness.—See Paralyses complicating Pregnancy.

Blood-Pressure.—See Part 1, General Medicine and Surgery.

Blood Transfusion.—See Part 1, General Medicine and Surgery.

Brain Hemorrhage in the New-Born.—See Intracranial Hemorrhage in the New-Born, in Part 1.

Braxton Hicks Bipolar Version.—See Cephalic Version.

Breast Abscess.—L. *abscéssus*, a going apart. See Mastitis.

Binder.—See under Caked Breasts.

Breast, Caked.—See Caked Breasts.

Breasts, Care of the.—See under Management of Pregnancy.

Drying up the.—See under Management of the Puerperium.

Engorgement of the.—See Caked Breasts.

Infection of the.—See Mastitis.

Inflammation of the.—See Mastitis.

Breech Presentations.—L. *præsenta'tio.*

Frequency.—About 1.3 per cent. of mature births, and 3.0+ per cent, of immature births.

Varieties, in order of frequency.—L.S.A.; L.S.P.; R.S.A.; R.S.P.

Etiology.—Flaccid uterine and abdominal walls; lower uterine segment larger than the upper; uterine malformation or deformity (uterus arcuatus, bicornis, etc.; fibroids); contracted pelvis; fœtal monstrosities; dead fœtus; small child; twins; abnormal mobility of the uterus or fœtus; large head; hydrocephalus; hydramnios; placenta prævia.

The fœtal mortality is high.

Treatment.—If the condition is observed before the onset of labor, and there is no marked disproportion between the size of the child and the pelvis, attempt external version (see Cephalic Version), followed by the application of an abdominal binder

over two long cylindrical compresses of gauze placed at the sides of the uterus, to prevent reversion.

Version is more apt to be successful, however, if performed at the beginning of labor and the fœtus held in place manually until engagement occurs.

If firm engagement has already occurred when the case is first seen, one may resort to the combined external and internal or bipolar method of version of Braxton Hicks (see Cephalic Version), as soon as the cervix will admit two fingers.

In uncorrected breech presentations, aim to prolong the first stage of labor and to prevent the rupture of the membranes (in order to secure full dilatation of the cervix), by keeping the patient quiet in the recumbent posture, discouraging voluntary abdominal action, and by the use of chloroform, if necessary. Have everything ready to resuscitate an asphyxiated child (see Asphyxia).

As soon as the breech appears, have an assistant exert firm downward pressure upon the fundus, in order to preserve head flexion and to prevent extension of the arms. Do not interfere until the umbilicus appears, even though a foot prolapses and appears at the vulva and tempts one to extract, unless, of course, the fœtal heart is slower than 100 or faster than 160, or the cord prolapses, or the mother is not doing well. Hasty extraction may cause extension of the head and arms and laceration of the cervix.

When the umbilicus appears, drawn down the cord for a few inches, place it to the rear, opposite a sacro-iliac joint, if possible, and constantly note the pulsation in it. Wrap the child's body in a hot towel (100° F.) to prevent the cold air from stimulating respiration. As the chin appears, elevate the trunk and urge the woman to bear down, while suprapubic pressure is exerted by the assistant. If the head does not come readily, employ the index finger in the mouth to flex and extract the head. Rotate the chin posteriorly if the head lies transversely at the pelvic outlet. (In the exceptional cases of backward rotation of the occiput, carry the body of the child downward if the head is flexed; upward over the mother's abdomen if the head is extended). If the arms are extended above the head, bring them down immediately by flexing them at the elbow, usually the posterior arm first. If necessary, forceps may be used for the after-coming head, the body of the child being elevated toward the mother's abdomen. The head should be born in less than eight minutes after the umbilicus.

If it is advisable to assist or to hasten labor, one may employ forceps, applied obliquely, one blade over the sacrum and the other over the thigh; or a foot may be brought down by Pinard's manœuvre, as follows: Pass the fingers up the thigh to the under surface of the knee and push the latter away from the middle line of the child's body; this will produce flexion of the leg, whereby the foot can be grasped and brought down. A fillet placed about the ankle, as shown in Fig. 92, may be of assistance in extracting the foot.

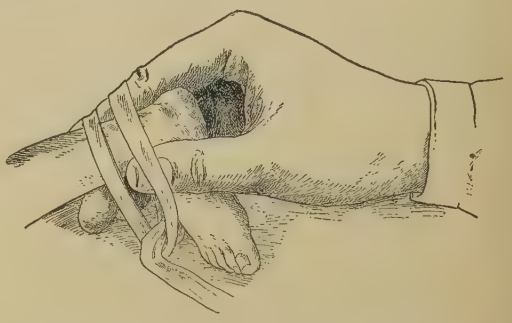


Fig. —92 A fillet placed about the ankle.

The fillet or the blunt hook, Fig. 93, is sometimes of use in breech extractions. The fillet is passed around the anterior groin or hip by means of Olivier's fillet-carrier or a flexible catheter containing a flexible stylet.

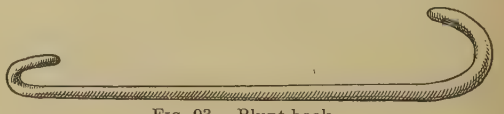


Fig. 93.—Blunt hook.

Bregma Presentations.—L.; Gr. *βρέγμα*; L. *præsenta'tio*. Presentation of the anterior or greater fontanelle, due to incomplete flexion of the head, diagnosed by vaginal palpation which reveals the bregma as the most prominent part of the fœtus presenting. It is very rare, says Hirst; common, says Edgar.

The causes are the same as for brow and face presentations.

Treatment.—Convert into a vertex presentation by pulling down the occiput with the fingers or pushing up the brow, during a uterine contraction, while pressure is made from above.

If uncorrected it causes tedious labor and perineal tears.

Brow Presentations.—

Frequency.—About 0.25 per cent. The diagnosis is made by digital examination.

It is the most unfavorable of all presentations for both mother and child, due to the

prolongation of labor, the occurrence of tears, and moulding of the head. If the chin is posterior, spontaneous birth is impossible.

The Causes are the same as for face presentations.

Treatment.—If the head is not deeply engaged or impacted, try to substitute a vertex presentation in the following manner: With one hand over the fundus attempting to flex the child's body, introduce the other hand into the vagina and uterus, and attempt to push the brow up and pull the occiput down. If this cannot be done, perform internal podalic version (*q.v.*), unless contraindicated by draining off of the liquor amnii, impaction, tetanic contraction of the uterus, or dangerous thinning of the lower uterine segment.

If the head is impacted, and the chin anterior, forceps (*q.v.*) may succeed, but are reputed to be dangerous. Forceps should never be employed when the chin is posterior.

Measures of last resort include pubiotomy (*q.v.*), if the child is alive, and craniotomy (*q.v.*) if it is dead.

Byrd's Method of Artificial Respiration.—See Asphyxia Neonatorum. in Part 1.

Cæsarian Section, Abdominal.—L. *sec'tio cæsa'rea.*

Indications.—Insuperable obstacles to the birth of the child per vaginam, *e.g.*, a markedly contracted pelvis, uterine fibroids, ovarian and pelvic tumors, cervical or vaginal atresia, malignant growths, etc.; also previous Cæsarean section; perhaps also placenta prævia, premature separation of the placenta, senile uterus, rigid birth passage in elderly primiparæ, eclampsia, pernicious vomiting of pregnancy, broken cardiac compensation, pulmonary œdema.

Contraindications.—Child dead or dying; infection evidently or probably present (if Cæsarean section is necessary in the presence of infection, remove the entire uterus including the cervix.)

A. Technique of the Classical Intra-Peritoneal Cæsarean Section.—Empty the bowels and bladder, the latter by catheterization, and shave and cleanse the vulva and vagina thoroughly with soap and water, followed by bichloride solution, 1 : 4000, or alcohol. Swab the abdomen with tincture of iodine. Administer ergotole, ℥xl, hypodermically.

Make an incision through skin, subcutaneous fat, linea alba, preperitoneal fat, and peritoneum, about seven inches long, "about two-thirds below and one-third above the umbilicus," and to the left of the latter (Williams), or from just below the umbilicus to two inches above the pubis (Chandler), thus avoiding the bladder. Some deliver the uterus through the abdominal incision, then clamp the edges of the latter together behind the cervix and cover with a towel in order to prevent contamination of the abdominal cavity. Others do not deliver the uterus, but wall off the intestines with gauze. The uterus is opened by a median longitudinal incision, made small at first with a scalpel, and enlarged with scissors to about seven inches, extending down to the peritoneal reflexion of the bladder. The placenta is cut through if necessary. The membranes are ruptured, and the child extracted by the anterior foot. If the uterus has been allowed to remain within the abdomen, it should be seized with volsellum forceps by an assistant, and brought up into the abdominal wound, as the child is delivered, in order to prevent the escape of blood and liquor amnii into the peritoneal cavity. The cord is cut between clamps, and all traces of placenta and membranes are peeled off the interior of the uterus. The latter may be exposed to view with small retractors. Close the uterine wound accurately by buried layers of interrupted chromicized catgut sutures extending down to, but not through the endometrium, and above this a "running sero-muscular stitch of linen placed close to the edge and invaginating the serosa." Sponge out all blood, etc., from the peritoneal cavity, and close the abdominal wound in layers.

If the cervix had not been dilated, do this now, to insure free drainage from the uterus.

B. Technique of the Krönig Transperitoneal Cæsarean Section.—With the patient in a high Trendelenburg position, make a median incision from the pubis to within two inches of the navel. Open the peritoneum, with care to avoid the bladder, which may be very high. Locate the peritoneal line of junction with the bladder, lift it up with forceps, and make a short transverse incision in the peritoneum similar to that for amputation of the uterus. Now push off the peritoneum and bladder from the anterior wall of the uterus, well down toward the external os, uncovering the muscle of the lower uterine segment for a space large enough to make a 4½ inch incision. Carefully incise the thin lower segment. Pull the face into the opening, and deliver the head with forceps. After delivering the child, express the placenta, clean out the uterus, pack the latter, if need be, and care-

fully coapt the incision by two rows of sutures closely set. Then draw up the peritoneum and bladder over the line of sutures and unite.

Gellhorn unites the parietal to the visceral peritoneum, temporarily, with a continuous suture, before incising the uterus.

C. Technique of the Latzko Extraperitoneal Cæsarean Section.—The abdominal incision may be either a median or a transverse one, just above the pubis. If a median incision is employed, it should begin one or two cm. above the symphysis and extend upward to about six cm. below the umbilicus. It is advisable to fill the bladder with about 200 c.c. of sterile boric acid solution. The muscles and prevesical tissue are separated by blunt dissection with the finger, gauze pads, and scissors, the left margin of the bladder is reached, and the bladder is then emptied and separated by blunt dissection toward the median line, exposing the uterine muscle. Take care not to mistake the bladder for the peritoneal fold. Push the latter upward toward the navel. With the bladder retracted toward the right, the cervix and lower uterine segment are incised, a finger is introduced into the mouth of the child to rotate the head, and delivery is accomplished with short forceps. The placenta is extracted manually, the uterine incision closed by means of a continuous suture, the bladder is replaced, and the abdominal wound closed.

Cæsarean Section, Vaginal.—See under Premature Labor, Induction.

Caked Breasts.—J. W. Williams well recommends firm compression of the breasts by means of a tight binder, which usually relieves the condition in twenty-four hours. If not, employ digital massage toward the nipple through a hot moist flannel, or the breast-pump, followed by reapplication of the binder. Saline cathartics (see Part 11) may be useful together with the restriction of liquids. Codeine, gr. ¼, repeated in three hours, if necessary, may be administered for distressing pain.

Calculus, Vesical.—L. *calc'ulus*, pebble; *vesic'a*, bladder. See Bladder Calculus.

Cancer of the Cervix Complicating Pregnancy.—L. *cancer*, Gr. καρκίνος crab; -ωμα tumor; L. *cer'vix*, neck. If discovered in the first four months, and if operable, *i.e.*, if it has not extended beyond the cervix, perform complete hysterectomy (see Cancer of the Uterus, in Part 2, Gynæcology). If inoperable, allow pregnancy to go on to term, and if the child can not be delivered per vaginam, perform Cæsarean section (*q.v.*).

In the later months, in operable cases, perform complete hysterectomy, and do not open the uterus until after it has been removed.

Cancer of the Vagina and Vulva Complicating Pregnancy.—Radical removal is, of course, indicated, if possible. Inoperable cases may require Cæsarean section (*q.v.*) at term.

Cardiac Disease Complicating Pregnancy and Labor.—Gr. καρδία heart.

A. Palpitations.—"Irregular or forcible action of the heart perceptible to the individual" (Osler) is usually produced by extra-systoles, the result of central, local, or reflex nervous excitation, and is not serious if unassociated with organic heart disease.

Etiology and Treatment.—(See Palpitation, in Part 1, General Medicine and Surgery.

B. Valvular Heart Disease.—This is serious; abortion often occurs, and the stress of labor is ill borne.

Enjoin mental and physical quiet, very moderate exercise in the open air, free bowel activity (employing, if necessary, a mild laxative, such as compound licorice powder, or aromatic cascara sagrada, or compound laxative pill, see Part 11), regular hours of eating and sleeping, at least ten or eleven hours of sleep at night, fresh air day and night, a daily tepid bath of about ten or fifteen minutes' duration, and a fair abundance of simple, bland, and nourishing food, such as milk, buttermilk, eggs, raw or boiled three minutes, stale bread and fresh butter, well-cooked farinaceous gruels, potatoes in moderation, fresh vegetables, meat, and stewed fruits, if the patient is feeble; and a restricted diet, especially as to carbohydrates, if the patient is stout. Foods that are likely to cause flatulency should be forbidden, *e.g.*, cabbage, peas, beans, lentils, sourkrout, starchy foods, such as potatoes in excess, and aërated beverages. Meat extractives, liver, kidney, sweetbreads, raw and smoked meats, condiments, spices, tea, and coffee, should also be avoided. They irritate the heart and raise the blood pressure. The patient should rest for one hour before and after meals.

Give digitalis (see Part 11) and strychnine on the first appearance of inadequate compensation (consult Cardiac Insufficiency, in Part 1, General Medicine and Surgery).

In the presence of inadequate compensation, do not allow pregnancy to continue longer than the thirty-sixth week. Then induce labor (see Labor, Premature, Induction of) or perform Cæsarean section (*q.v.*).

Abortion should be induced sooner (see Abortion, Induction of) should the symptoms become grave.

During labor, use ether instead of chloroform and give strychnine or digitalin hypodermically in adequate doses. Hasten dilatation of the cervix manually. As soon as the os is dilated to the size of a silver dollar, forceps may be applied, or a leg brought down, and dilatation hastened by judicious, gentle traction at intervals, waiting until the cervix is practically completely dilated before extracting the child. Moderate bleeding during the third stage may be beneficial. Ergot, one should remember, is a cardiac depressant.

Care of the Child.—See under Puerperium, Management of the.

Mother.—See Puerperium, Management of the.

Pregnant Woman.—See Pregnancy, Management of.

Puerperal Woman.—See Puerperium, Management of the.

Caries, Dental.—See Dental Caries.

Pelvic.—L. *car'ies*, rottenness; *pelv'is*, basin. See under Contracted Pelvis.

Cellulitis, Pelvic.—L. *cell'ula*, minute cell + Gr. *-ιτις* inflammation; L. *pelv'is*, basin. See Puerperal Infection.

Cephalhæmatoma.—See Part 1, General Medicine and Surgery.

Cephalic Version.—Gr. *κεφαλή* head; L. *ver'sio*, turning. The manual turning of the fœtus so as to make the head present.

Indications.—Breech and transverse presentations.

Contraindications.—Marked pelvic contraction; escape of the liquor amnii.

Technique.—A. External Version.—The child is turned by gently stroking the fetal poles, one toward the pelvis and the other in the opposite direction. Then an abdominal binder is applied over two long cylindrical compresses of gauze placed at the sides of the uterus to prevent reversion.

Version is more apt to be successful if performed at the beginning of labor, and the fœtus held in place manually until engagement occurs.

B. Combined External and Internal Version or the Bipolar Method of Braxton Hicks.—This method of version may be performed at the time of labor when the cervix is sufficiently dilated to admit two fingers, the membranes being intact. The external hand upon the abdomen pushes the upper pole of the fœtus around toward the pelvis while the internal fingers push the lower pole in the opposite direction.

Cerebral Hemorrhage in the New-Born.—L. *cer'ebrum*, brain; Gr. *αἷμα* blood + *ῥηγνύναι* to burst forth. See Intracranial Hemorrhage in the New-Born, in Part 1, General Medicine and Surgery.

Meningocele.—See Meningocele, Cerebral, in Part 1.

Cervical Atresia Causing Dystocia.—L. *cer'vix*, neck. See Atresia of the Cervix causing Dystocia.

Carcinoma Complicating Pregnancy.—See Cancer of the Cervix complicating Pregnancy.

Dilatation.—See Premature Labor, Induction of.

Laceration.—L. *lacera're*, to tear. See under Management of the Puerperium.

Rigidity Causing Dystocia.—L. *rigid'itas*, stiffness. See under Atresia of the Cervix.

Spasm Causing Dystocia.—Gr. *σπασμός*. See under Atresia of the Cervix.

Stenosis or Stricture Causing Dystocia.—Gr. *στένωσις*; L. *strictu'ra*. See Atresia of the Cervix.

Tears.—See under Management of the Puerperium.

Cesarian Section.—See Cæsarean Section.

Child, Care of the.—See Management of the Puerperium.

Diet of the.—See Infant Feeding, in Part 1, General Medicine and Surgery.

Diseases of the.—See Diseases of the New-Born Infant.

Dress of the.—See Management of the Puerperium.

Feeding of the.—See Infant Feeding, in Part 1.

Giant.—See Child, Large, below.

Large.—

Causes.—Prolonged pregnancy; one or both parents large; multiparity; advancing age of the mother.

Treatment.—Pregnancy should never be allowed to go over two weeks beyond term. If the patient has previously given birth with difficulty to large children, the diet should be restricted in the last two or three months of pregnancy, especially in starches and sugars.

If during labor the head does not engage, even after the employment of Walcher's hanging posture, the procedure is the same as that employed in generally contracted pelvis (*q.v.*)

If the after-coming shoulders are exces-

sively large, the clavicles may be divided with heavy scissors.

Chin Presentations.—See Face Presentations.

Chloasma in Pregnancy.—Gr. χλοάζειν to be green. Diffuse or patchy, yellowish or brownish pigmentation of the skin is a common accompaniment of the pregnant state. It is of no therapeutic importance.

Chondrodystrophia Fœtalis.—See Achondroplasia, in Part 1.

Chorea Complicating Pregnancy.—Gr. χορεία dance. For the treatment of chorea, consult Part 1, on General Medicine and Surgery. In pregnancy it may be a manifestation of toxæmia (*q.v.*,) One might try calcium, parathyroid extract, corpus luteum (See Part 11) and normal pregnancy serum (20 c.c.—Albrecht). In severe cases it is advisable to terminate pregnancy (see Abortion and Premature Labor). Abortion may ensue in severe cases, in which event the maternal mortality is high.

Chorio-Epithelioma; Deciduoma Malignum; Syncytioma Malignum.—See Part 2, Gynæcology.

Chyluria.—Gr. χυλός chyle + οὖρον urine. Chyluria is of no pathological import.

Cleft Palate.—See Harelip and Cleft Palate, in Part 1.

Cleidotomy.—Gr. κλείς clavicle + τομή cut. See under Craniotomy.

Colic.—See Part 1, General Medicine and Surgery.

Collapse.—L. *collap'sus.* See Shock, in Part 1.

Colpeurysis.—Gr. κόλπος vagina + εὐρύνειν to stretch. Distention of the vagina by means of a dilatable bag.

Colpitis.—Gr. κόλπος vagina + -ιτις inflammation. See Vaginitis.

Colpohyperplasia Cystica.—Gr. κόλπος vagina + ὑπέρ over + πλάσις formation; κύστις bag. See under Vaginitis.

Combined External and Internal Version of Braxton Hicks.—See Cephalic Version.

Complications of Labor.—L. *cum,* together, + *plica're,* to fold. See the following headings:

I. Inherent.—Abruptio placentæ, or premature separation of the normally situated placenta; adherent placenta; malpresentations, *e.g.*, bregma or anterior fontanelle; ear or parietal bone; breech; brow; chin or face; posterior occipital; transverse or shoulder; backward displacement of an arm; prolapse of an arm; prolapse of the cord; hæmatoma; hemorrhage, intra-partum; hemorrhage, post-partum; inertia uteri; inversion of the uterus; cervical laceration; perineal laceration; locked twins; multiple pregnancy; œdema of the vulva; placenta prævia; rupture of the pelvic joints; rupture of the uterus; shock and collapse; syncope.

II. Extraneous.—Adynamic diseases; atresia of the cervix; atresia of the vagina and vulva; cardiac disease; large child; contracted pelvis; uterine displacement; eclampsia; fibroid tumors; hæmatoma; hydrocephalus; ovarian tumors; pneumonia; typhoid fever; prolapse of the uterus; rigid cervix; transverse position of the head at the pelvic outlet; vaginal or vulval tumors; vaginismus; vesical calculus.

Complications of Pregnancy.—See the following captions:

I.—Inherent.—Varicose veins of the vulva; uræmia; abdomen, pendulous; toxæmia; rupture of the uterus; varicose veins of the legs; abortion, miscarriage, and premature labor; abruptio placentæ, or premature separation of the normally situated placenta; acid eructations; acute yellow atrophy of the liver; amaurosis and amblyopia; aphasia; bladder irritability; chloasma; chorio-epithelioma; deafness; eclampsia; extra-uterine pregnancy; epistaxis; gingivitis; glycosuria; headache; heartburn; hæmaturia; hæmoptysis; hemorrhage, ante-partum; vesical hemorrhoids; dermatitis herpetiformis; hiccup; hydatidiform mole; hydramnios; impetigo herpetiformis; incarceration of the uterus; incontinence of urine; insanity; jaundice; leucorrhœa; oliguria; polyuria; nausea and vomiting of pregnancy; osteomalacia; paralyses; phlegmasia alba dolens; hemorrhoids; placenta prævia; herpes gestationis; relaxation of the pelvic joints; pruritus; ptyalism or salivation; pyelitis and pyonephrosis; skin diseases; toothache.

II. Extraneous.—Anæmia; anorexia; appendicitis; asthma; hartholinitis; vesical calculus; cervical cancer; vaginal and vulval cancer; cardiac disease; chorea; constipation; convulsions; cough; death of the fœtus; dental caries; diabetes; diarrhœa; uterine displacement; dyspepsia; emphysema; enteralgia; fibroid tumors; gonorrhœa; hernia of the uterus; myometrial rheumatism; neuritis; ovarian tumors; anteflexion of the uterus; anteversion of the uterus; prolapse of the uterus; retrodisplacement of the uterus; syphilis; tuberculosis; vaginitis; venereal warts; vulval abscess; indigestion.

Complications of the Puerperium.—See the following headings:

Severe after-pains; anæmia; caked breasts; cervical laceration; diastasis of the abdominal muscles; uterine displacement (genito-urinary fistula; galactocele; galactorrhœa;

hemorrhage puerperal; inertia uteri; inversion of the uterus; mastitis; milk fistula; deficient milk secretion; excessive milk secretion; night sweats; inverted nipples; sore nipples; phlegmasia alba dolens; prolapse of the uterus; fever; hæmatoma; infection; insanity; retention of urine; subinvolution; superinvolution.

Conduct of Normal Labor.—L. *cum*, with + *du'cere*, to lead; *nor'ma*, rule. The duration of labor in primiparæ is about sixteen to eighteen hours or longer, in multiparæ about eight to twelve hours. The first stage, or the period from the onset to complete dilatation of the os, is about ten to sixteen hours in primiparæ, about six to eleven hours in multiparæ. The second stage, or the period from the completed dilatation of the os to the expulsion of the child, during which the woman bears down with each pain, is about one and three-quarters to two hours in primiparæ, about one hour in multiparæ. The third stage, or the period from the expulsion of the child to that of the placenta and membranes, is about fifteen to thirty minutes or longer.

For the physician's obstetrical outfit, see the Appendix following Part 4.

On entering the confinement room, inquire as to the time of onset, frequency, and duration of the pains (fifteen to thirty minutes apart at the beginning, they gradually increase in frequency until they eventually occur every two or three minutes); map out the fœtus, and listen to the fœtal heart. An internal examination (safest per rectum) affords satisfying information as to the progress of labor, indicated by the degree of dilatation of the cervix and the location of the presenting part, and also as to the shape and size of the pubic arch, the presentation and position of the child, the thickness and consistency of the perineum, the curvature, vertical and lateral, of the sacrum, and the diagonal conjugate. When the cervix is normal, its complete dilatation is indicated by the fact that Bandl's contraction ring (evident only during uterine contraction) is four fingers' breadth above the pubis, the bladder being empty.

Caution the patient against bearing down during the first stage, and thereby exhausting herself needlessly. Remind her to empty the bladder. Dilatation of the cervix may be hastened in the first stage of prolonged labors, and excessive suffering relieved, by the administration of chloral, or morphine, or scopolamine. (See Inertia Uteri.) Chloroform or ether is admissible as an analgesic, a few whiffs during pains, only during the second stage, when the pains are unendurable or when the head begins to distend the vulva.

The patient should go to bed on the beginning of bearing down pains (an indication of the onset of the second stage of labor), or on the rupture of the membranes; Hirst says, "as a rule, as soon as the os has reached the size of a silver dollar." She may be provided with a "puller," in the form of a twisted sheet fastened to the foot of the bed.

As soon as bearing down pains appear, make preparations for delivery. Place on a table at the side of the bed a basin of warm bichloride solution, 1 : 2000 (which may contain sterile gloves), gauze sponges, cotton pledgets, boric acid solution in a glass, sterile towels, sterile safety pins, bobbin or tape for tying the cord, curved needles, needle-holder, silkworm-gut, catgut, scissors (plain and umbilical), artery clamps, long dressing forceps, tenaculum forceps, and vaginal speculæ. Cleanse the genitalia with soap and water followed by bichloride solution, and apply compresses wet with the latter. Disinfect the hands. As soon as the head can be palpated through the perineum place at least four sterile towels about the vulva, one beneath the buttocks, and pin them in place. Begin to use chloroform or ether, giving it only during pains, as soon as the head begins to distend the vulva. If the membranes are still intact after the os is fully dilated (not before) they should be ruptured; but do not rupture them during a pain, for fear of prolapse of the cord. When the head begins to emerge from the vulva, push the chloroform to complete anæsthesia. Protect the perineum by restraining the oncoming head.

As soon as the head is born, examine the neck to see if it is encircled by the cord, and if so, try to slip the cord over the head. If this is impossible, cut the cord between ligatures or clamps, and then extract the child immediately, before it is asphyxiated. If the neck is free, support the head with the hand, and wait for nature to expel the remainder of the child. Do not pull upon the child, even though the head becomes alarmingly congested. While waiting for the birth of the body, the child's eyes may be cleansed with boric acid solution. If there is any possibility of gonorrhœa, instill two or three drops of a 2 per cent. solution of protargol or silver nitrate. The uterus may then be stimulated by rubbing or kneading it and by pressure over the fundus. As soon as the child is born, apply the hand to the abdomen and see, by pressure and kneading, that the uterus remains contracted.

Tie the cord in two places, after it has ceased to pulsate (about two or three minutes required), and cut it between the ligatures. If the child does not cry well, crook the little finger back of the epiglottis and clear out any mucus or blood present, then spank the inverted child. Wrap it in warm soft flannel, and place it between blankets in its crib.

While waiting for the birth of the placenta, repair perineal tears. Close them by deep sutures of silkworm gut, introduced far from the wound margins, and tied loosely from below upward. It is advisable first to approximate torn muscles with buried chromic catgut sutures, if asepis is assured, In complete tears, suture first the rectal mucosa and then the ends of the sphincter ani with buried catgut sutures. Remove the silkworm-gut sutures about the tenth day. In complete tears, aim to prevent a stool for three or four days, keeping a tube in the rectum, then give a high enema of sweet oil, followed by calomel, or castor oil by mouth. (Williams.)

After the fundus has risen up to or above the umbilicus (indicating the expulsion of the placenta into the lower uterine segment), or after the lapse of thirty minutes, or at once in the event of alarming hemorrhage, attempt to express the placenta by Credé's manœuvre. Grasp the uterus with the four or eight fingers posteriorly and the thumb or thumbs anteriorly, and knead and rub it until it contracts strongly; then, while it is contracting, squeeze it as one would squeeze a lemon, and press down in the direction of the axis of the superior strait. Persist in Credé's method at intervals for two hours or longer, if necessary, unless there is alarming hemorrhage, before resorting to manual removal of the placenta (*q.v.*, under Adherent Placenta). The use of pituitrin (*q.v.* in Part 11) may replace Credé's manoeuvre and produce prompt expulsion of the placenta.

Examine the placenta to see if it is all there. If portions are missing, it is advisable to remove then manually, to avoid subsequent hemorrhage.

After the expulsion of the placenta, administer ergot (*q.v.*). Give it or pituitrin hypodermically if the uterus tends to relax immediately after labor.

A nervous or vasomotor chill, of no importance, often follows the completion of the third stage of labor.

After labor is completed, cleanse the parts with bichloride solution, 1 : 2000, apply a large sterile pad to the vulva, and tie the knees together loosely with a cloth or bandage. A snug, folded, unbleached-muslin binder, reaching from below the trochanters to the lower ribs, and pinned from below upward or from above downward with safety pins placed longitudinally and not transversely, may or may not be applied. It is customary to place a folded cloth or pad above the fundus of the uterus before applying the binder. After the patient has been made comfortable, give her a cup of milk, weak tea, cocoa, or broth; darken the room, and allow her to sleep.

Remain with the patient for at least one hour, to see that the uterus remains firmly contracted, kneading it if necessary, *i.e.*, if hemorrhage occurs, but not otherwise (see Hemorrhage, Post-Partum). There is usually no danger of hemorrhage after the expiration of an hour, if no relaxation has occurrred within that time.

Inspect the baby's cord for hemorrhage before leaving, and leave printed directions for the care of the mother and child (see under Management of the Puerperium).

Confinement, Estimation of the Date of.—See under Stage of Pregnancy.

Congenital Rickets.—See Achondroplasia in Part 1.

Congestion of the Breasts.—L. *conge'rere*, to heap together. See Caked Breasts.

Conjunctivitis of the New-Born.—L. *conjuncti'va* + Gr. *-ιτις* inflammation. See Ophthalmia Neonatorum.

Constipation Complicating Pregnancy.—L. *constipa'tio*, a crowding together. Enjoin fresh air day and night, regular hours of eating and sleeping, a daily morning tepid sponge bath, before breakfast, in a comfortable room, followed by a cool spinal douche and vigorous rubdown with a coarse towel, and plenty of outdoor exercise, with about one hour's rest before and after meals. The diet should consist chiefly of fruits and vegetables, with plenty of water, avoiding tea, cocoa, chocolate, thick broths, sago, rice, farina, potatoes, liver, pork, salted, potted, or smoked fish and meats, cheese, excess of eggs or milk, nuts, huckleberries, red wines. A sugared orange for breakfast is often efficacious. The patient should eat slowly, and not overeat. A glass of cold water should be taken on rising, and a carbonated mineral water, such as Vichy or Apollinaris, or a glassful of cold or hot water to which may be added about fifteen grains of sodium bicarbonate, should be taken one hour before each meal. Water may be drunk freely between meals. About one-half to one hour after breakfast, the patient should repair regularly to the toilet.

Useful laxatives are the compound laxa-

tive pill, containing aloin, strychnine, belladonna, and ipecac, two pills at bedtime, aromatic fluid extract of cascara sagrada, ʒi–ii at bed-time, compound licorice powder, ʒi–ii at bed-time, sodium phosphate, ʒi–iv, one hour before breakfast, and broken doses of calomel followed by a saline (see Part 11) about once a month. To remove hardened fecal masses, give a high oil enema followed after one or two hours by glycerine and soapsuds, two tablespoonfuls of the former to each quart of the latter. Strong cathartics tend to produce abortion.

(Persistent constipation may be due to uterine displacement, *q.v.*)

Contracted Pelves.—L. *con*, together + *tra'here*, to draw; *pel'vis*, basin.

The normal pelvic measurements are:

1. Between the anterior superior iliac spines, 26 cm.

2. Between the widest parts of the iliac crests, 29 cm.

3. Between the widest parts of the trochanters, 32 cm.

4. Between the depression beneath the last lumbar spine and the anterior upper margin of the symphysis pubis (external conjugate or Bandeloque's diameter), 21 cm.

5. Conjugata vera (estimated by subtracting 1.5 or 2 cm., according to the height and inclination of the symphysis pubis, from the diagonal conjugate—distance from the lower margin of the symphysis to the sacral promontory), 11 cm.

6. Distance between the tubera ischii, 11 cm.

The external conjugate is of only approximate value. Internal pelvimetry should be employed if it is below 18 cm. If it is below 17 cm., the pelvis is invariably contracted; if it is between 18 and 19 cm., the pelvis is contracted in half the cases. (J. W. Williams).

In rachitic pelves the first two measurements approximate each other. If all the measurements are equally considerably shortened, the pelvis is a generally contracted one. If the antero-posterior diameters alone are shortened, the pelvis is flat. If the distance between the tubera ischii is 8 cm., or less, the pelvis is of the funnel type. According to Litzmann, a pelvis is contracted, when, if flat, the conjugata vera measures 9.5 cm. or less, and, if generally contracted, 10 cm. or less. Williams's careful statistics show that 7.46 per cent. of white women and 34.5 per cent of black women have contracted pelves, and about 6 per cent. of both races have funnel pelves.

Classification:

1. Simple Flat, Non-Rachitic Pelvis.—The antero-posterior diameters are shortened; the transverse diameters are normal. There is no widening of the transverse diameter of the pelvic outlet as in the rachitic form. Williams says, "In general, if the diagonal conjugate falls below 9 cm., the pelvis does not belong in this category."

2. Generally Equally Contracted Pelvis.—Remember that the external conjugate may be longer than usual in this type.

3. Generally Contracted, Flat, Non-Rachitic Pelvis.—A combination of the flat and generally contracted types.

4. Funnel Pelvis.—This includes the rare male type, the infantile, and the hunchback or kyphosis pelvis (of dorso-lumbar or lumbo-sacral kyphosis). The distance between the tubera ischii is 8 cm. or less. The funnel-shaped pelvis is the most frequent type of contracted pelvis in white women (37 per cent.—Thoms; 14.5 per cent. in black women—Thoms).

5. Rachitic Pelves.—(a) Flat, generally contracted; (b) Simple flat; (c) Generally equally contracted; (d) Pseudo-osteomalacic.

The distance between the iliac spines approaches or exceeds that between the crests; the tubera ischii are everted; the anterior surface of the sacrum is convex from side to side, instead of concave, while the lower portion is sharply bent forward. In rachitic pelves labor progresses easily after the head has passed the superior strait.

The following general signs are characteristic of rickets, viz., small stature, short, thick, curved extremities, low, broad brow, large square head, flat nose, chicken breast, rachitic rosary or beading of the ribs at their junction with the costal cartilages, enlarged joints, lordosis, late walking (after about the sixteenth month), and late teething (after about the eighth month).

6. Obliquely Contracted Pelvis.—This type of deformity is diagnosed by the marked inequality of the following bilateral measurements: (1) "from the anterior superior spine of one side to the opposite posterior superior spine"; (2) "from the spine of the last lumbar vertebra to the anterior superior spine on either side." It includes the very rare Naegele pelvis, in which the sacral alæ on one side are imperfectly developed, and the obliquely contracted pelvis of unilateral lameness (the result of coxitis, congenital dislocation of the hip, infantile paralysis, shortening of one leg).

7. Transversely Contracted or Robert Pelvis.—A very rare type of contraction, due to

imperfect development of both sacral alæ, in which all the transverse diameters are markedly shortened while the antero-posterior diameters are normal.

8. Osteomalacic Pelvis.—A rare form of extreme deformity (see Osteomalacia, in Part 1).

9. Spondylolisthesis.—Dislocation of the last lumbar vertebra forward and downward in front of the sacrum. There is lordosis and a waddling gait, and internal examination reveals the forward displacement of the body of the last lumbar vertebra. The condition is rare.

10. Tumors of the Pelves.—Enchondroma, exostosis, osteoma, fibroma, sarcoma, carcinoma, cyst, all very rare.

11. Fracture (very rare); Caries, and Necrosis.—

Contracted Pelves, Treatment of Labor in.—**1. Flat and Generally Contracted Pelves.**—The procedure in any given case should be governed largely by the history of previous labors, the size of the child, the age and parity of the woman (the expulsive forces are greater in primiparæ).

If the conjugata vera measures 10–7.5 cm., labor usually occurs spontaneously. If Cæsarean section at term has not been deemed advisable, assume an expectant attitude at the time of labor, and watch the mother and child for the first indications of exhaustion, etc., viz., steady increase in the frequency of the pulse, elevation of temperature, irritability, despondency, irregularity in the rhythm of the uterine contractions, the situation of Bandl's contraction ring (the contraction ring rises higher and higher toward the umbilicus as the lower uterine segment becomes more and more stretched; normally it is four fingers' breadth above the pubis when the cervix is completely dilated), marked œdema of the cervix, fœtal pulse below 100 or above 160, and the appearance of meconium in vertex presentations. If engagement does not occur, even after the employment of Walcher's hanging posture, one may try high forceps cautiously and tentatively, placing "one blade over the mastoid and the other over the opposite brow"; but it is perhaps better to resort at once to internal podalic version, if it is thought that the danger to the child is not too great. In performing podalic version in head presentations, insert the right or left hand according as the back of the child is directed to the right or left, and attempt to grasp, if possible, the anterior foot. In transverse presentations, seize the lower foot if the back is directed anteriorly, the upper foot if the back is directed posteriorly, in order to bring the back against the symphysis pubis. During extraction, an assistant should exert firm pressure upon the fundus uteri to prevent extension of the arms and to aid delivery.

If version does not seem advisable (it is contraindicated in tetanic contraction of the uterus, dangerous thinning of the lower uterine segment, as evidenced by the high position of Bandl's contraction ring, and early rupture of the membranes, with loss of the liquor amnii), one may consider pubiotomy (*q.v.*), or Cæsarean section (*q.v.*). Craniotomy (*q.v.*) should, of course, be done if the child is dead. It may even be demanded in the living child, if the facilities for performing pubiotomy or Cæsarean section are seriously inadequate.

Pubiotomy and Cæsarean section are contraindicated in the presence of infection. In such cases, if version and forceps (*q.v.*) are inapplicable, employ craniotomy. If Cæsarean section, however, is necessary the entire uterus, including the cervix, should be removed.

If the conjugata vera measures 7 cm. or less, perform Cæsarean section at term. If, however, when seen at the time of labor, the mother is in poor condition, the uterus is infected, or the child is in a poor way, perform craniotomy, providing the conjugata vera is above 5.5 cm. (the latter figure is an absolute indication for Cæsarean section). Pubiotomy is contraindicated when the conjugata vera measures 7 cm. or less. If the uterus is infected, the entire organ may be removed after the birth of the child.

Williams emphasizes "the great value of intelligent expectant treatment in contracted pelves," and the employment of pubiotomy or Cæsarean section if forceps or version are impracticable. He says, "It should always be remembered that a spontaneous outcome may be expected in from 75 to 80 per cent. of all contracted pelves, and that radical surgical interference will be necessary in less than one-half of the operative cases." He condemns the induction of premature labor (advocated by Hirst, Garrigues, and others at the thirty-sixth week when the conjugata vera measures 8.0–9.5 cm.) as futile.

2. Funnel Pelvis.—If the transverse diameter at the outlet is not much below 7.5 cm., pubiotomy (*q.v.*) is best. A diameter of 5 cm. or less demands Cæsarean section Lesser grades of narrowing may permit the spontaneous termination of labor or the successful use of forceps (*q.v.*). Posterior rotation of the occiput is favorable to spontaneous childbirth in these cases. (Hirst.)

3. Obliquely Contracted Pelves.—The Naegele pelvis calls for Cæsarean section (*q.v.*); but the latter is rarely required for cases due to unilateral lameness. In the latter cases, says Williams, "When the obstacle to the engagement of the head is not serious, version (*q.v.*) gives better results than forceps" (*q.v.*). Pubiotomy should not be attempted because of the possible existence of ankylosis of the sacroiliac synchrondroses. (Williams.)

4. Transversely Contracted or Robert Pelvis.—This demands Cæsarean section (*q.v.*).

5. Osteomalacis Pelvis.—See Osteomalacia, in Part 1.

6. Tumors of the Pelvis.—Cæsarean section is indicated.

7. Spondylolisthesis.—If the pseudo-conjugate is below 8 cm., perform Cæsarean section (*q.v.*) at term. After childbirth employ a brace (consult Part 10, on Orthopedics).

Convulsions.—L. *convul'sio*, from *convel'lere*, to pull together.

Causes.—Eclampsia (*q.v.*); exaggerated nervous irritability, in which "an overdistended bladder or bowel, pressure of the head on the perineum, the introduction of a hand to perform version, or excessive after-pains" may bring on a convulsion; uræmia; hysteria; epilepsy; apoplexy (cerebral hemorrhage, embolism, or thrombosis); cranial fracture; traumatism; Stokes-Adams disease; meningitis, acute or chronic; encephalitis; brain tumor; brain abscess; sclerosis cerebri; general paresis; cerebral syphilis; cerebral tuberculosis; cerebral arteriosclerosis; and other cerebral affections; chronic alcoholism; plumbism; pernicious malaria; hepatic toxæmia (acute yellow atrophy, portal cirrhosis, eclampsia, etc.); poisoning with strychnine, picrotoxin, camphor, phosphorus, nitrobenzol, ergot, etc.; profound post-hemorrhagic anæmia; Addison's disease; passage of a gallstone; tapping of a pleuritic effusion.

Cord, Prolapse of the.—L. *cho'rda;* Gr. χορδή; L. *pro*, before + *la'bi*, to fall.

Frequency.—1.18 per cent. (Edgar.)

Etiology.—Conditions which interfere with engagement, viz., pelvic contraction, large child, deformity of the head, twins, malpresentations; "excessive right lateral obliquity of the uterus"; hydramnios; "abnormal flaccidity of the lower uterine segment"; fibromyomata; too long cord; marginal insertion of the cord; placenta prævia; pendulous abdomen; multiparity; very small fœtus in premature labor; sudden escape of the liquor amnii, especially when the mother is in an upright position; violent movements of the mother.

The Prognosis is bad for the child.

Treatment.—If the cervix is completely dilated, extract the child immediately by internal podalic version (*q.v.*), unless the head is deeply engaged, when forceps (*q.v.*) should be used. When using forceps, place the cord, if possible, next the rectum.

If the cervix is not completely dilated, attempt to replace the cord by manipulation, under anæsthesia, if necessary, with the patient in the knee-chest, or better, the Trendelenburg posture (over the back of a chair). With the tips of the fingers push the cord up beyond the head, and with the other hand on the abdomen, press upon the fundus and gradually withdraw the hand. After reposition has been accomplished, place the woman on the side opposite to that on which prolapse occurred.

If manual reposition is unsuccessful, one may employ a long dressing forceps or an English catheter with enclosed stylet, as shown in Fig. 94, leaving the rubber repo-

Fig. 94.—English catheter

sitor in the uterus to ensure against recurrence of the prolapse.

Measures to keep the cord replaced, however, are nearly always unsuccessful, and it is usually necessary, if the head is not deeply engaged, to perform podalic version as soon as possible, bring down a leg, and as soon as the os is well dilated, extract rapidly.

Cough Complicating Pregnancy.—**Causes of Cough.**—Uterine, hepatic, gastric, nasal, aural, and pharyngeal reflex influences; nervousness; hysteria; habit; pharyngitis; tonsillitis; elongated uvula; adenoids; pressure upon the vagus caused by mediastinal tumors, posterior mediastinal abscess due to Pott's disease, and enlarged tracheobronchial glands; aneurysm or tumors pressing upon the trachea or bronchi; heart disease, valvular, myocardial, or congenital; pericardial effusion; pleurisy; adherent pleura; laryngitis; tracheitis; bronchitis; foreign bodies in the air passages; acute pulmonary congestion; pneumonia; phthisis; influenza; pertussis; asthma; hay fever; emphysema; bronchiectasis; pulmonary abscess; pulmonary gangrene; pulmonary œdema; pulmonary cirrhosis; pulmonary actinomycosis; pulmonary tumors; pulmonary distomiasis; echinococcus cyst of the lung; pneumokoniosis; pulmonary infarction.

Treatment of Neurotic or Reflex Cough.—Examine the generative organs for abnormalities. If cervical granulations are present, curette them away and touch the raw surfaces with pure carbolic acid (Edgar). A nerve sedative may be of service, *e.g.*, bromide, chloral, valerian, or asafœtida (see Drugs, Part 11). Hirst has obtained "better results from oil of sandalwood than from any other single remedy," whether the cough is due to a neurosis or to bronchial catarrh, (*q.v.*).

Cracked Nipples.—See Nipples, Sore.

Craniotomy.—Gr. *κρανίον* skull + *τομή* a cut.

Indications.—Difficult labor from any cause, or eclampsia, or any other grave disease, the fœtus being dead or dying; hydrocephalus; inability to extract the after-coming head.

Contraindications.—A conjugata vera less than 5.5 cm. Cæsarean section is here absolutely necessary.

Technique.—The head may be perforated by means of Smellie's scissors, or Blot's perforator, or an ordinary long, sharp-pointed pair of scissors. In occipital presentations it is perforated through one of the fontanelles; in face presentations, through the brow. In breech presentations, the after-coming head may be perforated through the temporal suture, the roof of the mouth, behind the ear, or through the foramen magnum. In the latter instance, a cervical vertebral arch is first excised, and a catheter is then passed through the spinal canal into the cranial cavity.

After breaking up the brain, it is washed out with normal salt solution (℥i ad Oi). Braun's cranioclast may then be applied, if necessary, one branch within and the other without the skull, the latter crushed, and the child extracted. Tarnier's basiotribe and Simpson's basilyst-tractor serve as perforator, crusher, and extractor.

Decapitation is sometimes required in neglected transverse presentations. It is performed by means of Braun's blunt hook, or Ramsbotham's sickle knife, or Gigli's wire saw, or a string, or scissors, the index finger being used as a guide. The head may then be perforated, and extracted with a cranioclast, while an assistant exerts pressure upon the fundus uteri.

Where the shoulders are excessively broad, the clavicles may be cut through with strong scissors, (cleidotomy).

Crede's Method of Expressing the Placenta.—See under Conduct of Normal Labor.

Cystic Vaginitis.—Gr. *κύστις* bladder or cyst. (See Vaginitis.)

Cystitis.—Gr. *κύστις* bladder + *-ιτις* inflammation. See Part 2, Gynæcology.

Cyst, Milk Retention.—Gr. *κύστις* cyst; L. *reten'tio.* See Galactocele.

Vaginal.—See under Atresia of the Vagina, and Vaginitis.

Date of Confinement, Estimation of the.—See Stage of Pregnancy.

Death of the Fœtus.—

Causes.—Abnormalities of development; uterine displacements, particularly retroflexion and prolapse; endometritis or deciduitis; chronic metritis, due to cervical laceration, etc.; syphilis (maternal or paternal); excessive torsion of the cord; stenosis of the umbilical vein; hydramnios; hydatidiform mole; placental disorders (obliterating endarteritis, infarcts, low implantation and placenta prævia, velamentous insertion of the cord, premature separation of the placenta); uterine developmental anomalies; uterine hypoplasia or infantile uterus; myomata; pelvic adhesions; maternal or paternal diseases, *e.g.*, tuberculosis, nephritis, alcoholism, plumbism, diabetes, malaria, cancer, icterus gravidarum, etc., paternal immaturity or senility, obesity, consanguinity between husband and wife, maternal heart, kidney, liver, or lung disease, anæmia, plethora, malnutrition, acute infectious diseases (even a mild pharyngitis), toxæmia, poisoning with arsenic, mercury, phosphorus, carbon monoxide, lead, tobacco, etc., traumatism, strong emotion.

Symptomatology.—The uterus ceases to enlarge (the abdominal circumference may be measured weekly with a tape measure), the fœtal movements and heart-sounds cease, the breasts become flabby, and there may develop, perhaps, slight elevation of temperature, perhaps loss of flesh, foul taste in the mouth, feeling of weight and discomfort in the pelvis, and mental disturbance. The fœtus is usually soon expelled.

Prophylaxis.—This depends upon the cause.

Deafness Complicating Pregnancy.—See Paralyses.

Decapitation.—L. *de*, from + *cap'ut*, head. See under Craniotomy.

Deciduoma Malignum.—See Chorio-Epithelioma, in Part 2, Gynæcology.

Deficient Milk Secretion.—See Milk Secretion, Deficient.

Delayed Labor.—See Dystocia.

Delivery.—See Conduct of Normal Labor.

Dental Caries Complicating Pregnancy.—L. *dens*, tooth; *car'ies*, rottenness. Instruct the patient to keep the teeth and gums clean by frequent brushing with castile soap and warm water, followed if desired by

an antiseptic mouth-wash, such as peroxide of hydrogen, 1 : 4, or Dobell's solution (*q.v.*); or liquor antisepticus (*q.v.*) 1 : 2 or 3 of water; or boric acid, borax, or sodium bicarbonate, ʒiv of either to the pint; or carbolic acid, gr. v ad ʒi; or milk of magnesia (*q.v.*); or lime water; drawing the fluid between the teeth. Swab necrosed cavities with pure carbolic acid or tincture of iodine. Only palliative dental work is admissible during pregnancy. Calcium is advised:

℞ Syrupi calcii lactophosphatis..... ʒviii
Sig.—A teaspoonful to a tablespoonful, t.i.d.p.c.

℞ Syrupi hypophosphitum..... ʒviii
Sig.—Two teaspoonfuls to one tablespoonful t.i.d.p.c.

Dermatitis Herpetiformis Complicating Pregnancy.—See Part 5, Skin Diseases.

Detachment, Premature, of the Normally Situated Placenta.—See Premature Separation, etc.

Diabetes Complicating Pregnancy.—Gr. *διά* through + *βαίνειν* to go. See Glycosuria in Pregnancy.

Diagnosis of Pregnancy.—Gr. *διά* apart + *γνῶσις* knowledge; L. *præg'nans*, with child.

Signs of the First Three Months.—

Cessation of the menses.

Morning sickness, or nausea and vomiting, which usually first appears at about the sixth or seventh week, and usually disappears by the fourth month.

Breast changes: tingling and fulness, deepened pigmentation of the areolæ, enlargement of Montgomery's glands, appearance of colostrum on pressure.

Bladder irritability, occurring in the first few months.

Uterine enlargement and softening.

Hegar's sign or an apparent disconnection of the cervix from the body of the uterus, due to softening of the lower uterine segment, and revealed by bimanual examination by means of a finger in the rectum and thumb in the vagina, the uterus at the same time being pressed down.

Softening of the cervix.

Chadwick's sign or purple congestion of the vulva and vagina.

Change in disposition.

Depraved or unusual appetite.

Chloasma.

Abderhalden's test, based upon the supposition that the parenteral introduction of foreign protein or carbohydrate into the body brings about the appearance in the blood serum of a specific proteolytic or amylolytic ferment, is probably of no value.

Signs of the Fourth and Fifth Months.—

Most of the above signs.

Quickening, or the perception of fœtal movements by the mother.

Ballottement, vaginal and abdominal.

Braxton-Hicks intermittent uterine contractions.

Fœtal heart sounds, usually first heard in the fifth month.

Signs of the Last Five Months.—

Most of the above signs.

Progressive enlargement of the abdomen.

Abdominal cutaneous striæ.

Protrusion of the umbilicus.

Perception of fœtal movements by the palpating hand, possible after the fifth month.

Ability to outline the fœtus by palpation.

Recurrence of bladder irritability in the last month.

Conditions which may simulate pregnancy are: Fibromyoma, sarcoma, hæmatometra, hydrometra, pyometra, tumors and cysts of the appendages and broad ligaments, ovarian cyst, inflammatory swelling of the appendages and broad ligaments, inflammatory exudates, metritis, obesity (abdominal or omental), ascites, abdominal hernia, tumor in the upper abdomen, distended bladder, tympanites, hypertrophy of the supravaginal portion of the cervix.

An examination under anæsthesia may be advisable.

Diarrhœa Complicating Pregnancy.—Gr. *διά* through + *ῥεῖν* to flow. First clear out the intestinal tract by means of a careful dose of castor oil, or calomel, in divided doses, followed by a saline; then, if the diarrhœa continues, administer an astringent:

℞ Bismuthi subnitratis.... ʒiv (ʒss–i per dose)
Mucilaginis acaciæ..... ʒii
Aquæ, q.s. ad..... ʒiv
M. Sig.—Shake well, and take one to two tablespoonfuls every four hours.

If astringents fail, try nerve sedatives, (even intestinal pains may be neurotic):

℞ Sodii vel potassii bromidi ʒiv (gr. x per teasp.)
Aquam, ad..... ʒiv
M. Sig.—One teaspoonful in water, half an hour before meals, together with the following:

℞ Tincturæ belladonnæ... ʒss
Sig.—Minims v, in water, half an hour before meals.

Valerian, or codeine (Part 11) may also be of service. (For more comprehensive information, consult Diarrhœa, in Part 1, General Medicine and Surgery.)

Diastasis of the Abdominal Muscles.—Gr. *διάστασις* separation; L. *ab'dere*, to hide;

L. *mus'culus*. Apply during the puerperium a firm abdominal binder, of folded unbleached muslin, reaching from below the trochanters to the lower ribs, and pinned from below upward or from above downward with safety-pins placed longitudinally and not transversely. If this is not effectual, massage, electricity, and abdominal exercises are recommended; and finally, J. C. Webster's operation.

Diet of the Infant and Child.—See Infant Feeding in Part 1, General Medicine and Surgery.

Pregnant Woman.—See Management of Pregnancy.

Puerperal Woman.—See Management of the Puerperium.

Difficult Labor.—See Dystocia.

Dilatation of the Cervix.—See Premature Labor, Induction of.

Heart.—See Cardiac Disease Complicating Pregnancy and Labor.

Diseases Complicating Labor.—See Complications of Labor.

Pregnancy.—See Complications of Pregnancy.

the Puerperium.—See Complications of the Puerperium.

Diseases of the New-Born Infant.—See the following headings:

Asphyxia neonatorum; atelectasis; cephalhæmatoma; harelip and cleft palate; hemorrhagic diseases of the newly born; icterus neonatorum; intracranial hemorrhage in the new-born; meningocele, cerebral; spina bifida; œdema neonatorum; prematurity; sclerema neonatorum; sternocleidomastoid hæmatoma; stridor; achondroplasia (congenital or fetal rickets; chondrodystrophia fœtalis; micromelia); birth palsies, cerebral hemorrhage in the new-born; colic; ophthalmia neonatorum; melæna neonatorum.

Displacement, Backward or Dorsal, of an Arm.—See Arm, Backward Displacement of an.

Displacement of the Parturient Uterus Causing Dystocia.—L. *partu'riens*, giving birth; *u'terus*, womb; Gr. δυς ill + τόκος birth. In sacculation of a retroplaced uterus, where the cervix is above the pelvic inlet and is pressed against the anterior abdominal wall, perform artificial dilatation (see Premature Labor, Induction of), and version and extraction (see Podalic Version); rarely is Cæsarean section (*q.v.*) demanded.

If the cervix is displaced posteriorly, apply an abdominal binder, in order to correct anteflexion, and "hook the cervix forward with the finger during two or three pains." (Hirst.)

In persistent prolapse with marked œdema of the protruding cervix, "multiple incisions may be necessary in order to effect delivery." (Williams.)

Displacements of the Pregnant Uterus.—L. *præg'nans*, with child; *u'terus*, womb.

A. Antedisplacement.—If associated with adhesions, or if due to operative anterior fixation, the rising of the uterus into the abdominal cavity may be hindered giving, rise to pain and difficult urination, and possibly abortion or incarceration. Hirst recommends bimanual pelvic massage, pressure tampons, and digital pressure for the purpose of stretching or breaking adhesions. Laparotomy, to free the uterus, may be necessary.

In the later months of pregnancy, pendulous abdomen may result, for which an abdominal supporter should be worn.

B. Retrodisplacement.—Early in pregnancy the patient complains of persistently frequent and painful micturition. Spontaneous reposition, or abortion, or incarceration may occur. The latter is manifested by retention and overflow of urine, dysuria, pain in the lower abdomen and back, possibly inflammation or gangrene of the uterus, bladder, and rectum, possibly peritonitis, uræmia, rupture of the bladder, or septico-pyæmia.

Replace the uterus, if possible. First catheterize the patient with a soft rubber, a semi-stiff, or a metal, perhaps a prostatic, catheter (never glass), assisting its introduction, if need be, by traction upon the cervix with a tenaculum (the urethra is apt to be greatly lengthened). If the bladder is very much distended, do not withdraw all the urine at one time, for fear of vesical hemorrhage and collapse, but wait a few hours before emptying the bladder, or empty the bladder very slowly, allowing no less than twenty minutes for its complete evacuation. Then attempt, under anæsthesia if necessary, with the patient in the lithotomy or knee-chest position, to push the fundus upward and forward with the fingers or a cotton tampon held by forceps in the posterior vaginal vault, drawing the cervix down with a tenaculum if necessary. If the uterus is bound down by adhesions, pack tampons in the posterior vaginal vault (employing Sims' semiprone posture and Sims' speculum), and renew these daily, or employ the "watch-spring" pessary; or leave in a colpeurynter for twenty-four hours at a time. These measures are apt, of course, to provoke abortion. If replacement is accomplished, employ a large-sized Smith-Hodge pessary until the uterus has risen into the abdomen, which occurs about the fourth month.

If the first efforts at replacement fail, Williams advises waiting well into the third month, "in the hope that spontaneous reduction may still occur"; and then, if necessary, repeating the efforts at reduction. If again unsuccessful, however, laparotomy should be performed and the uterus replaced, or abortion (*q.v.*) should be induced.

If incarceration has occurred, catheterize the bladder as before described, or aspirate suprapubically if catheterization is impossible, and if extreme congestion and œdema are present, keep the patient upon her back with hips elevated for several days, and administer saline cathartics (*q.v.*), scarify the cervix, and insert vaginal tampons, soaked in equal parts of glycerine and water, twice daily (Reynolds and Newell). Then attempt to replace the uterus under ether anæsthesia. If replacement is impossible, perform laparotomy, unless symptoms of infection or gangrene are present, when abortion should be induced by digital dilatation of the cervix and rupture of the membranes, or by incision of the fundus uteri through the posterior vaginal vault.

C. Prolapse.—Complete or incomplete spontaneous reposition, abortion, or incarceration (see above) may occur.

After emptying the bladder and bowel, replace the uterus with the patient in the knee-chest posture, after which insert a globe, air, or water pessary, retained by a T-bandage. Examine the patient every two or three weeks, and alter the shape and size of the pessary as required.

If the pelvic floor is too relaxed to retain a pessary, keep the patient as much as possible in the recumbent posture until after the fourth month.

If a tumor or adhesions are present, abdominal or vaginal section may be required.

If the uterus is incarcerated, proceed as directed above. Vaginal hysterectomy is advised if the uterus is infected.

D. Hernia (Inguinal, Ventral, or Vaginal).—Try to replace the uterus. If this is impossible, dilate the cervix, insert the hand, and perform version and extraction, and restore the uterus to the abdominal cavity. Cæsarean section (*q.v.*), or hysterectomy may be required.

Displacements of the Puerperal Uterus.—L. *pu'er*, boy + *pa'rere*, to bear; *u'terus*, womb.

Causes.—Distended bladder or rectum; subinvolution; straining; getting up too soon; sudden physical effort; application of pad and binder over the uterus, instead of placing the pad above the fundus; previous displacement.

Treatment.—Employ the knee-chest posture for five to fifteen minutes twice daily, until the sixth week, when a pessary should be employed (consult Displacements of the Uterus, in Part 2, Gynæcology). Do not postpone the correction of displacements much beyond the sixth week. Pessaries and packs are contraindicated before the sixth week. Early operation is advised for prolapsus uteri.

Displacements of the Uterus.—(Parturient Uterus, Pregnant Uterus, Puerperal Uterus, *q.v.*).

Distention of the Abdomen.—See Tympanites.

Dorsal Displacement of an Arm.—L. *dor'sum*, back. See Arm, Backward Displacement of an.

Drying up the Breasts.—See under Management of the Puerperium.

Duration of Labor.—See under Conduct of Normal Labor.

Pregnancy, Estimation of the.—See Stage of Labor.

the Puerperium.—See under Management of the Puerperium.

Dyspepsia Complicating Pregnancy.—Gr. δυς — ill + πέπτειν to concoct. The sour eructations and heartburn of pregnancy, due probably to a reflex hyperchlorhydria, are relieved by alkalies: sodium bicarbonate, magnesium carbonate in chalk form, or milk of magnesia (see Part 11).

℞ Sodii bicarbonatis..... ℥iv (gr. xxx per dose)
Magnesii oxidi..... ℥iv (gr. xxx per dose)
Aquæ, q.s. ad..... ℥viii
M. Sig.—Shake well, and take two tablespoonfuls in half a glass of water, as required.

Correct constipation (*q.v.*). A liberal diet is usually allowable. Neutral fats (olive or sweet almond oil (*q.v.*) shaken with water to remove fatty acids, cream, and fresh butter) are useful for their action in inhibiting secretion. An oil may be given a half hour before each meal.

Dystocia; Prolonged or Difficult Labor.—Gr. δυς — ill + τόκος birth.

Causes.—Contracted pelvis (*q.v.*); large child (*q.v.*); malpositions and malpresentations of the fœtus (see Presentations); vaginal or vulvar atresia (*q.v.*); cervical atresia (*q.v.*), including rigidity, spasmodic or organic; cervical carcinoma (*q.v.*); pathological enlargements or deformities of the fœtus (hydrocephalus (*q.v.*), etc.); fibroid tumors and polypi (*q.v.*); ovarian tumors (*q.v.*); pelvic tumors (see under Contracted

Pelves); uterine displacements (*q.v.*); full bladder; full rectum; adhesions between the membranes and the cervix; vaginal enterocele (see D. Hernia, under Displacements of the Pregnant Uterus); tumors of the bladder; tumors of the rectum; large stone in the bladder (see Bladder Calculus); dorsal displacement of an arm (*q.v.*); prolapse of an arm (*q.v.*); inertia uteri (*q.v.*); premature rupture of the membranes (dry labor); deficient action of the abdominal muscles in the second stage; tetanic contraction of the uterus due or not to a mechanical obstacle; isolated contraction of Bandl's ring (hour-glass contraction); operations for the relief of retrodisplacements of the uterus.

Ear or Parietal Bone Presentations.—L. *par'ies*, wall; *præsenta'tio*. Presentation of the anterior parietal bone or anterior ear is termed Naegele's obliquity; of the posterior parietal bone or ear, Litzmann's obliquity. The condition is diagnosed by internal palpation, the whole hand being introduced. The cause is some form of obstruction, especially a contracted pelvis (*q.v.*). The faulty presentation should, if necessary, be corrected manually during labor. For pendulous abdomen during pregnancy, an abdominal supporter should be worn.

Eclampsia.—Gr. ἐκ out + λάμπειν to flash. The occurrence of coma, with or without convulsions, in the pregnant, parturient, or puerperal woman as a result of the hepatic (pre-eclamptic) toxæmia of pregnancy (*q.v.*). Rarely does eclampsia occur without preceding symptoms of toxæmia.

The Frequency is about one in every five hundred pregnancies.

The Prognosis is grave for both mother and child.

One attack of eclampsia seems to render the patient immune against subsequent attacks in later pregnancies, whereas, " in patients suffering from chronic nephritis, the recurrence of uræmic convulsions is not uncommon." (Williams.) See Metabolism in Part 1.

Treatment.—Two plans of treatment are in vogue, one radical or operative, and the other inclining to conservatism.

A. First Plan.—Empty the uterus at once. If labor and dilatation of the cervix have not begun, perform either vaginal hysterectomy (*q.v.*) and version and extraction (*q.v.*) under ether anæsthesia, or Cæsarean section (*q.v.*), which is perhaps best, because of its celerity (*?*). If labor and cervical dilatation have begun, one may attempt to hasten the process by careful and gentle, not too rapid, manual dilatation by Harris's method, under full ether anæsthesia, followed by forceps (*q.v.*) or version.

After delivery has been effected, promote free catharsis, diuresis, and diaphoresis, as described below.

B. Second Plan.—Place two or three drops of croton oil in half a teaspoonful of olive oil, or else a triturate of elaterin, gr. ss–i, on the back of the tongue; or better, insert a stomach tube and introduce 2 oz. of Epsom salts in concentrated solution, or 2 oz. of castor oil containing 2 drops of croton oil; or, if the patient can swallow, administer a dessertspoonful of a concentrated solution of Epsom salts every fifteen minutes until free catharsis begins. Employ also repeated copious high enemata. At the same time sweat the patient by means of hot-wet packs, under blankets, or hot water bottles, or hot air, or best, by surrounding her lower limbs and trunk with six or eight hot bricks, wrapped in towels, over which is poured a pint or more of alcohol, and the whole covered with a rubber sheet or blankets (Hirst). Apply ice-bags to the back of the head and neck during the sweat bath.

As soon as catharsis and diaphoresis are established, give normal salt solution (0.85 per cent.) under the breasts. Give a thorough sweat for thirty minutes, together with a saline infusion, one to two pints, every four to six hours.

To control the convulsions, administer ether, also chloral hydrate per rectum, gr. xxx–lx in solution, every six to ten hours; or morphine, gr. ¼ to ½ hypodermically; or tincture of veratrum viride, ♏x–xx, hypodermically, then ♏x every half hour, " till the pulse continues below 60 to the minute " (" it diminishes the pulse rate, controls the convulsions, reduces the temperature, promotes diaphoresis and diuresis, and relaxes the cervical ring "—Edgar; and also lowers the blood-pressure; " whiskey, or morphine will easily control vomiting and collapse if they occur," says Edgar). Veratrum viride is not universally advocated.

Puncture the membranes, in order both to lower the blood pressure and to hasten labor. When the os is dilated to the size of a dollar, dilatation being assisted with the fingers, apply forceps (*q.v.*) if the head is engaged, or perform podalic version (*q.v*) if the head is not engaged, or bring down a leg if the breech presents. Do not attempt to drag the child through an undilated os, but pull down cautiously against the os and so hasten its dilatation, when delivery may then be effected. Some prefer the use of

hydrostatic dilators (see Premature Labor, Induction of).

Avoid the use of ergot after delivery. Continue free catharsis, diuresis and diaphoresis, and if the convulsions continue, withdraw 500 to 600 c.c. of blood, "no matter what the condition of the pulse" (Williams), followed perhaps by the infusion of an equal or less amount of normal salt solution. Bleeding removes toxin, and tends to prevent pulmonary œdema and apoplexy, frequent causes of death in eclampsia. Lumbar puncture (*q.v.* in Part 1) is recommended. Apply wet or dry cups (*q.v.* in Part 1) over the chest in pulmonary œdema. Administer stimulants hypodermically as required, *e.g.*, alcohol, strychnine, digitalis, camphor, nitroglycerine, ether (see Part 11). Diuresis is promoted by means of dry or wet cups over the kidneys, followed by hot fomentations. Oxygen per inhalation is recommended for the stupor or coma. It may be administered through a funnel draped with a curtain and held over the mouth and nose. Says L. E. Hill, pure oxygen may be breathed for two to four hours continuously, without harm, and an atmosphere of 50 per cent. oxygen can be breathed indefinitely. He says: "The cylinder valve must be opened wide enough to give a pleasant cool current (as tested upon the lips), and drive the exhaled CO_2 out of the mask." After consciousness is regained, give four or five quarts of milk daily for a few days. Many obstetricians recommend thyroid as one of the best remedies for eclampsia, *e.g.*, gr. xv, repeated in two hours.

Ectopic Gestation.—Gr. ἔκτοπος displaced; L. *gestat'io*, pregnancy. See Extra-Uterine Pregnancy.

Edema of the Vulva.—See Œdema of the Vulva.

Elevation of Temperature, Puerperal.—See Puerperal Fever.

Emphysema Complicating Pregnancy.—Gr. ἐμφυσᾶν to inflate. Consult Part 1, General Medicine and Surgery, for the treatment of emphysema. If dyspnœa is extreme, pregnancy may have to be terminated (see Premature Labor, Induction of).

Emphysematous Colpitis.—Gr. ἐμφύσημα inflation; κόλπος vagina. See Vaginitis.

Endometritis, Puerperal.—Gr. ἔνδον within + μήτρα uterus + -ιτις inflammation. See Puerperal Infection.

Engorgement of the Breasts.—See Caked Breasts.

Enteralgia Complicating Pregnancy.—Gr. ἔντερον intestine + ἄλγος pain. See Dyspepsia Complicating Pregnancy.

Epistaxis Complicating Pregnancy.—Gr. ἐπίσταξις nose-bleed. Consult Part 8, on Nose Diseases. Hirst says, "It can only be checked by the rapid termination of labor."

Eructations, Acid, Complicating Pregnancy.—L. *eructátio*, belching; *ácidus*, sour. (See Dyspepsia Complicating Pregnancy.)

Excessive Milk Secretion.—See Milk Secretion, Excessive.)

Expression of the Placenta by Credé's Method.—L. *expreśsio*; *placen'ta*, flat cake. See under Conduct of Normal Labor.

External Version.—L. *extér'nus*, outside. See Cephalic Version.

Extra-Uterine Pregnancy.—See Part 2, Gynæcology.

Face Presentations.—L. *præsenta'tio.*

Frequency.—About 0.4 per cent.

Varieties, in Order of Frequency.—L.M.A.; R. M.P.; R.M.A.; L.M.P.

On external palpation, there is noted a marked cephalic prominence on the same side as the back, the latter being felt distinctly only near the breech; but the diagnosis is usually made only by internal palpation. Spontaneous delivery is the rule, especially in multiparæ, provided the chin is directed anteriorly. Should the chin rotate into the hollow of the sacrum, spontaneous delivery is usually impossible. Such an event, however, is of very rare occurrence, about 1 per cent. of all face presentations.

Etiology.—Conditions which prevent flexion or favor extension of the head, *e.g.*, oblique position of the uterus; multiparity; contracted pelvis; large child; low implantation of the placenta; tumors of the neck; rigid os; constriction of the cervix about the neck; coils of cord around the neck; tonic contraction of the neck muscles; fœtal obesity; fœtal dropsy; muscular flaccidity of an asphyxiated or dead fœtus; mobility of the fœtus; dolichocephalic head; spinal meningocele or other tumor on the back; distended maternal bladder; prominent ischial spines; hemicephaly; prematurity; hydramnios; multiple pregnancy; monstrosity; pendulous abdomen; "triangular and saddle-shaped uteri"; deformed pelvis; pelvic tumor; occiput posterior.

Treatment.—If deep engagement has not occurred, anæsthetize the patient, and with one hand or an assistant producing flexion of the back, introduce the other hand, and try, by pushing up the chin or by traction upon the occiput, to convert the face into a vertex presentation, unless, perhaps, the chin is directed anteriorly. Even in the latter instance, however, conversion may be practiced, followed by rotation of the

occiput to an anterior position and extraction with forceps (see Occipito-Posterior Presentations).

If the above measures fail, and the face is not impacted, perform internal podalic version (*q.v.*).

If the face is deeply engaged or impacted, and the chin directly posteriorly, allow labor to proceed, "in the hope that anterior rotation will occur when the face reaches the pelvic floor." One may aid rotation by pressing on the posterior cheek and chin with the fingers, to favor increased extension, or by placing a single blade of the forceps under and behind the chin, to supply the normal resistance of the pelvic floor. Or, rotation may be attempted with the forceps, if the chin is not imbedded in the pelvic floor, and when the chin is anterior, the forceps removed and reapplied and traction exerted. Never employ traction when the chin is posterior.

If these measures fail, resort to pubiotomy (*q.v.*) or craniotomy (*q.v.*).

Failure of Vision.—See Paralyses Complicating Pregnancy.

False Pregnancy.—See Diagnosis of Pregnancy.

Feeding.—See Diet.

Fetus.—See Fœtus.

Fever, Puerperal.—See Puerperal Fever.

Fibroid Tumors Causing Dystocia.—L. *fi'bra*, fibre + Gr. εἶδος form; L. *tu'mor*, swelling; Gr. δυς — ill + τόκος birth. If, at labor, the tumor is in the pelvis, and can not be pushed above the pelvic brim, with the patient in the knee-chest posture and under anæsthesia, perform Cæsarean section (*q.v.*), followed by enucleation of the tumor or supravaginal amputation of the uterus. Even if the child could be delivered past the tumor, the latter is apt to slough and give rise to fatal infection.

Polypoid tumors should be removed at the time of labor, after dilatation has begun, by ligating the pedicle and cutting off the tumor.

Fibroid Tumors Complicating Pregnancy.—L. *fi'bra*, fibre + Gr. εἶδος form; L. *tu'mor*, swelling; *præg'nans*, with child. Should serious symptoms at any time occur, such as marked hemorrhage, extreme distention, or symptoms of impaction, perform supravaginal hysterectomy (in preference to myomectomy), first removing the child if it has reached the age of viability (seven months).

Polypoid tumors should be removed only at the time of labor, because of the danger of provoking abortion if removed earlier (see also Fibroid Tumors causing Dystocia, above).

Fissured Nipple.—L. *fissu'ra*. See Sore Nipples.

Fistula, Genito-Urinary.—L. *fis'tula*, pipe; L. *genita'lis*; *uri'na*. The condition is diagnosed by the presence of urinary incontinence, by colposcopy, cystoscopy, a sound in the bladder, and the injection into the bladder of a colored fluid.

Treatment.—The wound may be allowed to close spontaneously; or it may be closed by an operation four to six weeks after childbirth.

Fistula, Milk.—See under Mastitis.

Flat Pelvis.—See Contracted Pelves.

Flatulence.—L. *flatulen'tia*. See Tympanites.

Fœtus, Death of the.—L. See Death of the Fœtus.

Presentation of the.—See Presentations.

Rickets.—See Achondroplasia in Part 1.

Fontanelle (Anterior or Greater) Presentation.—Fr. *fontanelle*, little fountain. See Bregma Presentations.

Forceps.—L.

Indications.—Maternal or fœtal danger, viz., broken cardiac compensation, pulmonary œdema, tuberculosis, nephritis, acute infectious disease, local infection, hemorrhage, exhaustion, inertia uteri, eclampsia, strangulated hernia, rupture of the uterus, weak abdominal cicatrix, dry labor, contracted pelvis, large child, resistant vaginal outlet, transverse or posterior position of the head, cord around the neck, prolapse of the cord, fetal pulse below 100 or above 160, escape of meconium in vertex presentations, etc.

Contraindications.—Head too large or pelvis too contracted; chin posterior in face or brow presentations (*q.v.*).

Simpson's or Tarnier's axis-traction forceps are the best.

Before attempting to extract with forceps the cervix should be fully dilated. The membranes should, of course, be ruptured before the forceps are applied, and the bladder should be emptied.

The forceps may be lubricated with creolin or lysol solution, one teaspoonful to the quart, or with sterile vaseline. The first blade is always inserted beneath the posterior ear, the hand being used as a guide.

If forceps are used where the head is floating, apply "one blade over the mastoid and the other over the opposite brow." Internal podalic version, however, is practically always to be preferred in these cases.

In occipito-posterior presentations, if the

occiput cannot be rotated manually to a transverse or anterior position, try to rotate it with the forceps. The latter are applied as though the occiput were anterior; then, after rotation has been accomplished, they are removed and reapplied. If rotation is impossible, extract with the occiput posterior.

Fractured Pelvis.—L. *fractu'ra*, from *frang'ere*, to break. See under Contracted Pelves.

Funnel Pelvis.—See Contracted Pelves.

Galactocele; Milk Retention Cyst.—Gr. γάλα milk + κήλη tumor; κύστις cyst; L. *rete'ntio*. Milk retention cyst is rare. If small, it may be removed by massage, or by the application of heat and firm compression. Otherwise it must be tapped and drained.

Galactorrhœa.—Gr. γάλα milk + ῥοία flow. The constant escape of milk, independently of nursing. It may persist for years in spite of treatment.

Treatment.—The breasts should be supported with or without firm compression. Potassium iodide, belladonna, ergot, chloral, antipyrine, and laxatives are variously recommended (see Part 11). Edgar has found the local application of atropine, gr. i, in glycerine, ʒi, "of great value." The application to the nipples of cocaine hydrochlorate, 5 per cent., in equal parts of glycerine and water, is also advocated.

It is said that the flow usually ceases on the return of menstruation; therefore the latter may be encouraged by means of warm douches and local applications to and scarification of the cervix. Intra-uterine galvanism (10 to 12 milliampéres, with the negative pole within the uterus) is considered the most effectual, but at the same time dangerous.

Genito-Urinary Fistula.—See Fistula, Genito-Urinary.

Giant Children.—See Child, Large.

Gingivitis Complicating Pregnancy.—L. *gingiv'a*, gum + Gr. -ιτις inflammation; L. *præg'nans*, with child. Spongy and bleeding gums may persist obstinately until the termination of pregnancy.

Treatment.—The teeth should be kept clean with warm water, castile soap, and a soft brush or cloth, and one of the following aseptic and astringent preparations used as a mouth-wash:

℞ Acidi carbolici ..... ♏lxxx
Sodii boratis,
Sodii bicarbonatis, aa ..... ʒii
Glycerini ..... ʒss
Aquæ, q.s. ad ..... Oi
M. Sig.—Mouth-wash.

℞ Tincturæ myrrhæ ..... ʒi
Aquæ, q.s. ad ..... Oi

Once daily the gums may be painted with tincture of iodine or a strong solution of silver nitrate, or one of the following:

℞ Tincturæ krameriæ,
Tr. iodi, aa ..... ʒv
Tr. myrrhæ ..... ʒiiss

℞ Tr. krameriæ,
Tr. myrrhæ, aa ..... ʒss

Edgar recommends milk of magnesia as a mouth-wash, and at bedtime precipitated chalk pressed between the teeth.

Enjoin the observance of correct hygiene, *e.g.*, fresh air day and night, adequate rest and exercise, regulation of the bowels, a daily tepid bath in a comfortable room before breakfast followed by a cool spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, and abundance of fresh food. For anæmia, prescribe iron (*q.v.* in Part 11).

Glycosuria in Pregnancy.—Gr. γλυκύς sweet + οὖρον urine; L. *præg'nans*, with child. If the sugar is lactose, as determined by the fermentation test (see Urinalysis, in Part 1), it is of no significance. Even if it is glucose, it usually disappears shortly after childbirth. If the glucose is abundant, however, the case should be treated as one of diabetes mellitus (consult Part 1, on General Medicine and Surgery), and if the symptoms progress, abortion should be performed (see under Abortion).

Gonorrhœa Complicating Pregnancy.—Gr. γονή semen + ῥεῖν to flow; L. *præg'nans*, with child. (Consult Part 2, on Gynæcology.) Intracervical treatment, however, should be employed, if at all, with care, because of the danger of provoking abortion.

Gonorrhœal Ophthalmia Neonatorum.—See Ophthalmia Neonatorum.

Granular Vaginitis.—L. *gran'ulum*, grain. See Vaginitis Complicating Pregnancy.

Gynatresia.—Gr. γυνή woman + α priv. + τρῆσις perforation. See Atresia.

Hæm.—See Hem.

Hanging Posture, Walcher's.—See under Contracted Pelves.

Harelip and Cleft Palate.—See Part 1, General Medicine and Surgery.

Headache in Pregnancy.—See Toxæmias of Pregnancy.

Heads, Locked.—See Multiple Pregnancy.

Head, Transverse, at the Pelvic Outlet.—See Transverse Position of the Head at the Pelvic Outlet.

Heartburn.—See Dyspepsia Complicating Pregnancy.

Heart Disease.—See Cardiac Disease Complicating Pregnancy and Labor.

Heart, Palpitations of the.—L. *palpita'tio.* See Cardiac Disease.

Hæmatoma of the Vagina or Vulva.—Gr. αἷμα blood + -ωμα tumor. A vaginal or vulval hæmatoma that interferes with labor should be incised, the blood-clot evacuated, and the cavity packed with gauze to check bleeding.

A puerperal hæmatoma may be subcutaneous, vaginal, cervical, or subperitoneal. If extensive, it may be first manifested by severe local pain, collapse, and acute anæmia, occurring within twelve hours after delivery. If it is of moderate size, it usually becomes absorbed, with rest and careful cleanliness, *i.e.*, frequent bathing or irrigation with boiled boric acid solution, ʒi–iv ad Oi. If it is very large, is steadily increasing in size, or gangrene threatens, it should be laid wide open, evacuated, and packed with gauze. Laparotomy is demanded for large subperitoneal hæmatomata. If spontaneous rupture occurs, enlarge the opening, turn out the clot, and pack firmly with gauze if the bleeding vessel can not be quickly found and ligated.

Suppuration, of course, calls for free drainage.

Hæmatoma of the Sternocleidomastoid.—See Part 1, General Medicine and Surgery.

Hæmaturia Complicating Pregnancy.—Gr. αἷμα blood + οὖρον urine; L. *præg'nans*, with child. The hæmaturia of pregnancy is usually due to varicose veins of the bladder. It is sometimes severe.

Treatment.—Tight clothing and constipation should be avoided, and the patient should assume the knee-chest posture frequently.

Should the hemorrhage become serious, insert a retention catheter, to quiet the bladder, and inject about three ounces of hot silver nitrate solution, 1 : 1000 to 1 : 500; or the same amount of Merck's sterilized solution of gelatine, 2 to 5 per cent., hot; or fluid extract of hydrastis, one ounce to the pint; or antipyrine, 4 per cent.; or a heaping teaspoonful of Squibb's surgical powder (contains alum) suspended in 500 c.c., or one pint of hot water ("the best application I know," says Keyes). Adrenalin, 1 : 5000 to 1 : 1000, is not satisfactory, say Casper and Keyes. Rest in bed, with the hips elevated, is essential. To evacuate clots, insert a large glass or metal catheter, and irrigate with hot salt or alum solution, ʒi ad Oi; or hot phenol solution, 1 per cent.; or a cool solution of sodium bicarbonate. (For other causes, etc., of hæmaturia, consult Part 2, on Gynæcology.)

Hæmoptysis in Pregnancy.—Gr. αἷμα blood + πτύειν to spit; L. *præg'nans*, with child. Hæmoptysis, says Hirst, may occur, independently of any lung disease, in the later months of pregnancy, as the result of "cardiac nerve storms" in neurotic women; and rest together with "chloral and the bromides will control the attack." For a fuller consideration of Hæmoptysis, consult Part 1, on General Medicine and Surgery.

Hemorrhage, Ante-Partum or Pre-Partum.—Gr. αἷμα blood + ῥηγνύναι to burst forth; L. *ante* or *præ*, before; *par'tus*, labor. Hemorrhage occurring during pregnancy, and before the onset of labor.

Causes.—Abortion, miscarriage, or premature labor (*q.v.*); extra-uterine pregnancy (*q.v.*); hydatidiform mole (*q.v.*); cervicitis and endocervicitis; cancer of the cervix (*q.v.*); fibroid polyp (*q.v.*); prolapsus with extreme congestion (*q.v.*); hemorrhoids of the vagina or vulva (*q.v.*); placenta prævia (*q.v.*); persistence of menstruation (rare); premature detachment of the normally situated placenta (*q.v.*).

Hemorrhage, Cerebral, in the New-Born.—See Hemorrhage, Intracranial, in the New-Born in Part 1.

General, in the New-Born.—See Part 1.

Intracranial, in the New-Born.—See Part 1.

Intra-Partum.—L. *intra* within, + *par'tus*, labor. Hemorrhage occurring during labor.

Causes.—1. First and Second Stages.—Placenta prævia (*q.v.*); premature separation of the normally situated placenta (*q.v.*); rupture of the uterus (*q.v.*); lacerations of the cervix or vagina; rupture of varicose veins; rupture of a hæmatoma (*q.v.*); intra-uterine rupture of the cord; tearing of the vessels of a velamentously inserted cord when the membranes rupture; uterine fibroids (*q.v.*); malignant disease (see Cancer.)

2. Third Stage.—Inertia uteri (*q.v.*); lacerations of the lower uterine segment, cervix, vagina, or perineum; incomplete separation of the placenta (see Adherent Placenta); "insufficient contraction of the lower uterine segment in cases of low implantation of the placenta"; rupture of varicose veins; rupture of a hæmatoma (*q.v.*); inversion of the uterus (*q.v.*); fibroids (*q.v.*); cancer (*q.v.*).

Hemorrhage, Meningeal, in the New-Born.—Gr. μῆνιγξ membrane. See Hemorrhage, Intracranial, in the New-Born, in Part 1.

Post-Partum.—L. *post*, after + *par'tus*, labor. Hemorrhage occurring within twenty-four hours after the birth of the

placenta. Hemorrhage occurring later than this is designated puerperal hemorrhage (*q.v.*). The hemorrhage is rarely concealed and associated with shock and abdominal distention.

Frequency.—About 5 per cent. (Edgar); one in several hundred (J. W. Williams).

Causes.—The common causes are atony or relaxation of the uterus, retention of portions of the placenta (due to too early employment of Credé's manœuvre or to decidual endometritis), and cervical, vaginal, or perineal tears.

Rare causes are fibromyomata, polypi, carcinoma, ulceration, inversion of the uterus, rupture of varicose veins, rupture of a hæmatoma (*q.v.*); aneurysm of the uterine artery, congestion due to heart, liver, lung, or kidney disease, alcoholism, malaria, leucocythemia, hemorrhagic diathesis, change from a temperate to a tropical climate.

Predisposing causes of uterine relaxation are as follows: poor health; difficult labor; multiparity; over-distention due to hydramnios or twins; neighboring disease; old peritoneal adhesions; uterine fibroma; ovarian cyst; rapid, especially instrumental labor; malposition of the uterus; too much anæsthetic; distended bladder or rectum; emotion; exertion; *e.g.*, coughing, laughing, sneezing, defecation, sitting up in bed, etc.; undeveloped musculature; retention of placental remnants or clots; imperfect innervation; placenta prævia; paralysis at the placental site.

Treatment.—Look first to the uterus, and if it is not firmly contracted, knead it vigorously until it contracts. Zweifel massages the fundus with the right hand, while the left hand, palm upward, is pressed down forcibly between the uterus and pubis, against the lower uterine segment (this may not be possible in fat women). As soon as the uterus is firmly contracted, entrust it temporarily to an assistant, and inject, deep into the muscles of the thigh, 40 to 60 minims of ergotol or fluid extract of ergot, or 0.5 to 1 c.c. of pituitrin. The action of the latter is transient.

Howat, in cases of sudden relaxation of the uterus, first compresses the abdominal aorta, then with a rapid change in the position of the hand, grasps the fundus, and with the other hand in the vagina and behind the cervix, effects a bimanual anteflexion of the fundus and cervix by pressure between the two hands. In this way the open channels of the placental site are blocked, and the uterus emptied of blood and stimulated to contract. Immediately after this the pelvis is lifted by an assistant to an angle of about 30 degrees, and an inverted chair placed beneath the patient, to improvise an exaggerated Trendelenburg position. When the uterus is firmly contracted, the vaginal hand may be withdrawn and a vulvar dressing and firm abdominal binder (*q.v.*) applied. The elevation of the pelvis should be maintained for at least seven hours.

The aorta may be effectually compressed by means of a stout rubber tube about the waist. (Momburg.)

Other means of checking hemorrhage in atony are (1) the hot intra-uterine douche of several quarts of normal saline solution (℥i ad Oi), or better, creolin emulsion, 1 per cent., or the injection of one ounce of undiluted tincture of iodine; (2) tight packing with sterile gauze, or better, 0.5 per cent. lysol gauze, or iodoform gauze, which should be removed at the end of twelve to twenty-four hours, followed by irrigation; (3) ice or ether to the hypogastrium for a few seconds; (4) the strong faradic current; (5) strong traction upon the uterus with bullet forceps grasping the lips of the cervix; (6) compression of the uterus with the fingers of one hand in the anterior fornix and the other hand over the uterus. (Breisky.)

If it is suspected that portions of the placenta are retained within the uterus, insert the gloved hand, and, assisted by the external hand upon the abdomen, remove any placental fragments, blood-clots, etc., that may be found, at the same time irritating the uterus; then, with the external hand still upon the abdomen, remove the internal hand while the uterus is contracting.

If, on the occurrence of post-partum hemorrhage, the uterus is found to be contracted, the hemorrhage is probably due to laceration of the birth canal. In order to facilitate examination and treatment, the aorta may be compressed by means of Momburg's rubber tube, but the latter is not without danger, *e.g.*, intestinal necrosis, hemorrhage, spinal paralysis, etc. The cervix may be drawn to the vulva with the fingers or with bullet forceps, an assistant at the same time pressing down firmly upon the uterus. Vaginal retractors may be employed, if desired. The tear should be sutured from the upper angle downward with chromicized catgut. If, however, suture can not be advantageously accomplished, insert a tight vaginal pack "in the form of a half ring in the lateral vault of the vagina." (Hirst.)

If the patient has lost much blood, surround her with hot water bottles, raise the

foot of the bed, provide plenty of fresh air, enjoin absolute quiet, and administer per colon or subcutaneously a pint of warm normal saline solution (0.8 to 0.9 per cent., or, say, gr. xlvi to the pint, temperature 102° F.) or, better, gum-salt solution (see Part 11). Give the infusion slowly, and repeat every hour until the pulse is restored. If the pulse is very rapid, or syncope occurs, give stimulants hypodermically, *e.g.*, strychnine, gr. $\frac{1}{30}$ to $\frac{1}{15}$; camphorated oil, ♏xv–xxx; digitalin (*q.v.*); ether, ♏x–lx; or give a hot rectal enema of black coffee and salt solution, equal parts. In severe cases, bandage the extremities evenly and firmly toward the trunk, over thick layers of non-absorbent cotton, for one or two hours.

As soon as the stomach will retain anything, give very small quantities of hot milk, hot coffee, or hot water and brandy every fifteen minutes. Later, give beef-juice, panopeptone, mutton broth, etc. If there is vomiting, feed per rectum. The following is a useful nutrient enema: two raw eggs, well beaten; three or four ounces of warm milk; twenty grains of sodium bicarbonate; thirty grains of sodium chloride (fifteen grains to each egg); a dessertspoonful of liquor pancreaticus; perhaps a tablespoonful of grape sugar (to obviate acidosis); and, if desired, one or two tablespoonfuls of claret or brandy.

When reaction is established, morphine, gr. $\frac{1}{8}$ to $\frac{1}{4}$, may be given to calm the patient and to relieve intense headache due to cerebral anæmia (morphine produces cerebral congestion).

Later, to restore the blood, prescribe rest, fresh air, a liberal diet, and iron (see Part 11).

Hemorrhage, Puerperal.—L. *pu'er*, boy + *par'ere*, to bear. Hemorrhage occurring at any time from twenty-four hours after the birth of the placenta to the end of the sixth week. Hemorrhage occurring within twenty-four hours after the birth of the placenta is designated post-partum hemorrhage (*q.v.*).

Etiology.—Retained placental or decidual fragments; uterine displacements (*q.v.*); "dislodgement and disintegration of clots at the placental site," due to sudden exertion or to infection of the clots (the hemorrhage is usually sudden and copious); emotion; rarely relaxation of the uterus, due to retention of portions of the after-birth, or to physical and mental depression resulting from prolonged labor, poor food, or bad hygiene; retention of blood-clots, due to uterine relaxation, displacements, or retention of portions of the after-birth; fibroids; cancer; inversion of the uterus (*q.v.*); rupture of a hæmatoma; wounds of the cervix, vagina, or vulva; pelvic congestion, due to overuse of chloroform or stimulants, cardiac, renal, or hepatic disease, increased intra-abdominal pressure from tumor, etc., malaria, acute infectious diseases, puerperal infection (*q.v.*); chill (causing congestion of the internal organs), periuterine inflammation, subinvolution (*q.v.*), ovarian irritation, constipation, premature sexual intercourse, or "erethism following the return of the husband to the wife's bed."

Treatment.—Shave and cleanse the external genitalia and neighboring skin thoroughly with castile or green soap and warm water, and cleanse the vagina with soap and water, followed by bichloride solution, 1 : 4000; then cover the lower limbs and abdomen with sterile sheets, exposing only the vulva, and make an examination.

Ligate any bleeding vessels discovered. Explore the uterine cavity with the finger, dilating the cervix with Hegar's bougies, if necessary, evacuate the uterus, and irrigate it through a return-flow tube with hot water at a temperature of 110° F. If there are symptoms of infection, treat as such (see Puerperal Infection).

In cases of relaxation, infection, or dislodged thrombi, pack the uterine cavity with gauze, preferably iodoform or 0.5 per cent. lysol gauze. Seize the anterior lip of the cervix as high as possible with two bullet forceps, introduce a strip of gauze with the long forceps, grasp the fundus with the left hand, and then push in the forceps gently, as far as they will go, and so on until the uterus is packed (Hirst). Ergot, fl. ext., ʒi–ii, may be administered. The packing must be removed at the end of twelve to twenty-four hours and the uterus irrigated.

Treat displacements of the uterus as described under Displacements of the Puerperal Uterus.

In rupture of a hæmatoma, enlarge the opening, turn out the clot, and if the bleeding point cannot be quickly found and ligated, pack firmly with gauze.

Remove accessible fibroids by means of the wire écraseur, by torsion or ligation of the pedicle and cutting with scissors, by splitting of the capsule followed by enucleation, or by hysterectomy. One must bear in mind that the uterine wall is apt to be very thin. For severe hemorrhage, pack the uterus with gauze and administer ergot; if this fails, perform hysterectomy.

In operable cancer, apply a uterine or vaginal tampon, and perform hysterectomy at once. If inoperable, curettage and pack-

ing may be indicated, but if the hemorrhage is uncontrollable, the internal iliac, ovarian, and round ligament arteries must be ligated.

Hemorrhagic Diseases of the New-Born.—See Hemorrhage, General, in the New-Born in Part 1.

Hemorrhoids Complicating Pregnancy and the Puerperium.—Gr. *αἷμα* blood + *ῥοία* flow. Employ only palliative treatment, viz., recumbency, with the hips elevated; the knee-chest posture for about fifteen minutes several times daily; laxatives (cascara, licorice powder, rhubarb, magnesia, sulphur, compound laxative pills, (see Part 11); local analgesics; a bland diet; alkalies for gastric hyperacidity (E. Palier); local cleanliness with castile soap and water, and perhaps a cool cleansing enema after each bowel movement, and local astringent applications:

℞ Acidi tannici..... gr. x
Pulveris camphoræ..... gr. v
Ichthyoli..... ʒiss
Unguenti zinci oxidi, q.s. ad..... ʒi
M. Sig.—Apply by means of a pile-pipe, night and morning, and after each bowel movement, the parts being first cleansed with castile soap and water. (Kerley.)

For painful, œdematous, irreducible piles, cleanse the parts with castile soap and water, rinse, and bathe with boric acid solution, ʒi–iv ad Oi, and apply either (1) hot fomentations or hot poultices or a hot sitz-bath for about half an hour; or (2) compresses wet with lead and opium lotion (*q.v.* in Part 11), or aluminum acetate, one tablespoonful to a cup of water, and covered with an ice-bag. A suppository containing opium, aq. ext., gr. i, may be inserted, if necessary. Other soothing applications are the following:

℞ Unguenti gallæ et opii..... ʒi
Sig.—Apply several times daily, as required.

℞ Unguenti gallæ,
Unguenti stramonii, aa..... ʒss
Sig.—Apply several times daily, as required.

℞ Pulveris opii..... gr. x
Extracti hyoscyami..... gr. xii
Extracti hamamelidis..... ʒii
Petrolati mollis, q.s. ad..... ʒi
M. Sig.—Apply every three to four hours about one-twelfth of the above. (Earle.)

℞ Chrysarobini..... gr. xii
Iodoformi..... gr. ivss
Extracti belladonnæ foliorum..... gr. viiiss
Petrolati mollis..... ʒiv
M. Sig.—Apply several times daily. (Cohnheim.)

℞ Chrysarobini..... gr. iss
Acidi tannici..... gr. iss
Iodoformi..... gr. iii
Extracti belladonnæ foliorum..... gr. ⅓
Olei theobromatis..... gr. xxx
M. ft. suppos. I, No. 12.
Sig.—Use two or three daily. (Cohnheim.)

A hard, painful, thrombotic hemorrhoid may be incised under local cocaine or novocaine anæsthesia (see Part 11), and the clot turned out.

(For the radical treatment of chronic hemorrhoids, consult Part 1, on General Medicine and Surgery.)

Hemorrhoids, Vesical.—L. *vesi'ca*, bladder. See Hæmaturia.

Hepatic Insufficiency.—Gr. *ἧπαρ* liver; L. *in*, not + *suffic'iens*, sufficient. See Toxæmias of Pregnancy.

Toxæmia.—See Toxæmias of Pregnancy.

Hernia of the Pregnant Uterus.—L. See under Displacements of the Pregnant Uterus.

Herpes Gestationis.—Gr. *ἕρπης*; L. *gestátio*, pregnancy. See Dermatitis Herpetiformis.

Hiccough Complicating Pregnancy.—For uncontrollable hiccough, prescribe morphine and atropine, or hyoscine, or chloral (see Part 11). The induction (*q.v.*) of labor is sometimes necessary.

Hicks Bipolar Version.—See Cephalic Version.

Hydatidiform Mole.—L. *hy'datis;* Gr. *ὑδατίς vesicle*; L. *mo'les* mass. A very rare disease of pregnancy, characterized anatomically by cystic degeneration of the terminal extremities of the chorionic villi, and clinically by rapid enlargement of the uterus toward the third or fourth month, uterine hemorrhage, and sometimes the expulsion of small, transparent vesicles. The vesicles may sometimes be palpated by the finger introduced through the cervical canal.

Treatment.—Abortion (*q.v.*) should be induced as soon as the condition is diagnosed, since fatal perforation of the uterine wall or malignant degeneration of the mole into chorio-epithelioma (*q.v.*,) may occur if the mole is allowed to remain. It should be removed thoroughly by means of the fingers and placenta forceps, and the uterus then irrigated and packed with gauze to stimulate contraction and control hemorrhage. One must remember that the uterine wall may be very thin and weak. Ergot (*q.v.*) should be given for several days following the removal of the mole.

If vaginal or vulvar metastases occur, and the uterine scrapings show no evidence of chorio-epithelioma, it is sufficient to excise the metastases.

Should metrorrhagia later occur, even after the lapse of months or years, the endometrium should be curetted and examined for chorio-epithelioma. The presence of the latter demands immediate hysterectomy.

Hydræmia.—Gr. *ὕδωρ* water + *αἷμα* blood. See Anæmia.

Hydramnios.—Gr. *ὕδωρ* water + *ἀμνίον* amnion, lamb. Excess of amniotic fluid, *e.g.*, about five pints or more. The frequency is about one in 250 to 300 pregnancies. The diagnostic characters are a cystic abdominal tumor associated with the history of pregnancy.

In very rare cases the fluid accumulates rapidly, with severe dyspnœa, cyanosis, pain, vomiting, and fever.

Treatment.—In acute hydramnios, dilate the os and rupture the membranes, preferably at a point far within the uterine cavity, in order to avoid too rapid escape of the amniotic fluid and consequent syncope. The hand or gauze may possibly be used as a plug to prevent too sudden escape of fluid. Labor is thus induced.

In chronic hydramnios, employ rest and an abdominal support. If, however, respiratory and circulatory embarrassment become severe and the patient becomes weak, terminate pregnancy as described above.

Post-partum hemorrhage from inertia uteri is apt to occur; therefore it is probably wise to administer pituitrin (*q.v.*) immediately after delivery.

The fœtus in hydramnios is apt to be deformed, and about 25 per cent. die.

Hydrocephalus Causing Dystocia.—Gr. *ὕδωρ* water + *κεφαλή* head; *δυς* ill + *τόκος* birth. The condition is diagnosed by the presence of a large skull which fluctuates and crackles on palpation; on vaginal examination the sutures are found, besides, to be widely separated.

Treatment.—Perforate the skull as soon as the cervix is completely dilated, and if spontaneous labor does not then occur, extract the fœtus with the cranioclast (see Craniotomy).

Hygiene of Pregnancy.—Gr. *ὑγιεινός* healthful. See Management of Pregnancy.

the Puerperium.—See Management of the Puerperium.

Hyperemesis of Pregnancy.—Gr. *ὑπέρ* over + *ἔμεσις* vomiting. See Nausea and Vomiting of Pregnancy.

Hyperthermia Occurring in the Puerperium.—Gr. *ὑπέρ* over + *θέρμη* heat. See Puerperal Fever.

Hysterotomy, Vaginal.—Gr. *ὑστέρα* uterus + *τομή* cut; L. *vagĭna*, a sheath. See under Premature Labor, Induction of.

Icterus Neonatorum.—L. ; Gr. *ἴκτερος* jaundice; *νέος* new + L. *na'tus*, born. Jaundice in the new-born may be physiological and mild, or severe and due to umbilical thrombophlebitis, or epidemic hæmoglobinuria without sepsis of the umbilical vessels, or hemorrhagic purpura (morbus maculosus neonatorum).

Impetigo Herpetiformis Complicating Pregnancy.—See Part 5, Skin Diseases.

Incarceration of the Pregnant Uterus.—L. *in*, in + *car'cer*, prison. See Displacements of the Pregnant Uterus.

Incontinence of Urine.—L. *incontinentĭa; ur'ina*. See Bladder Irritability.

Indigestion Complicating Pregnancy.—L. *in*, not + *dis*, apart + *ge'rere*, to carry. See Dyspepsia.

Induction of Abortion.—L. *in*, in + *du'cere*, to lead. See under Abortion, Miscarriage, and Premature Labor, in Part 2, Gynæcology.

Induction of Premature Labor.—See Premature Labor, Induction of.

Inertia Uteri.—L. Sluggishness of the uterine contractions during labor should not be confused with prolonged labor due to an obstruction but with good pains. In inertia, the uterine contractions are slight, brief, and infrequent, whereas in obstructed labor with good pains the upper uterine segment may, indeed, be tetanically contracted, as revealed by inspection and palpation.

Etiology.—Imperfect muscular development of the uterus; weakened musculature, the result of rapidly succeeding pregnancies, overdistention due to multiple pregnancy or hydramnios, exhausting diseases, the anæmic form of obesity, and profuse hemorrhage, as in placenta prævia; disadvantageous action, as in the presence of fibroid tumors, uterus bicornis, uterine displacements, old peritoneal adhesions, or fresh periuterine inflammation; inhibitory nervous influences, as in nervousness, emotion, or pain (in inertia due to pain the contractions recur rapidly and are very brief and painful); premature rupture of the membranes (dry labor); mechanical obstructions to labor; full bladder; full rectum; physiological fatigue.

Treatment.—1. First Stage.—If excessive pains and nervous apprehension are evidently exerting an inhibitory influence upon the regular course of labor, one may administer a calmative, such as chloral hydrate, gr. x–xv, well diluted, by mouth, and repeated in fifteen to sixty minutes, if necessary, or gr. xxx in warm milk, ʒiv, per rectum, repeated in one hour, if necessary; or morphine, gr. $\frac{1}{8}$ to $\frac{1}{4}$, with atropine, gr. $\frac{1}{150}$, hypodermically; or scopolamine (hyoscine), gr. $\frac{1}{80}$; or antipyrine, gr. x, repeated, if necessary; or a "wineglassful of sherry, taken slowly, with a biscuit" (Hirst). These

drugs, by alleviating suffering, promote more regular contractions of the uterus with corresponding relaxation of the cervix and perineum. A hot full bath renders the same service.

As a uterine stimulant, quinine, gr. xv, is much used in the first stage of labor, and is especially valuable in multiparæ. It occasionally produces a "violent post-partum hemorrhage" Hirst). Pituitrin is best reserved for the second stage.

The mother and child should be watched for the first indications of exhaustion, *e.g.*, a steady increase in the frequency of the pulse, elevation of temperature, irritability, despondency, a fœtal pulse below 100 or above 160, and the appearance of meconium in vertex presentations, when labor should be hastened by artificial means.

In order both to stimulate the uterus and to hasten cervical dilatation, one may insert a bougie or a small Champetier de Ribes or Voorhees rubber bag (see under Premature Labor, Induction of).

When the head is well engaged and the os dilated to the size of a silver dollar, Hirst recommends that forceps be applied, and the head at intervals pulled down firmly upon the cervix, the forceps to be removed as soon as dilatation begins to progress and "efficient pains are established."

Manual dilatation by Harris's method, where the external os alone remains undilated, and vaginal hysterotomy (*q.v.*) are reserved for urgent cases.

If the os is nearly dilated, artificial rupture of the membranes often hastens labor.

2. Second Stage.—In cases of nervous inhibition, the light administration of chloroform or ether during a pain may hasten the second stage.

In suitable cases, pituitrin, 0.5 c.c., repeated if necessary, is of value as a uterine stimulant in the second stage. The dangers attendant upon its use should be borne in mind; they are: rupture of the uterus, tearing of the cervix and perineum, premature separation of the placenta, asphyxiation of the child. Contraindications to the use of pituitrin are serious mechanical obstruction to labor, threatened or actual rupture of the uterus, the presence of uterine scars, placenta prævia, multiparity, extreme obesity, cardiac disease, high blood pressure (arteriosclerosis, nephritis, preëclamptic toxæmia, eclampsia).

Employ forceps (*q.v.*) or version (*q.v.*) in high arrest of the head, forceps in low arrest; but do not attempt version for two hours following the administration of pituitrin.

3. Third Stage.—In a delayed third stage, persist for at least two hours in intermittent gentle efforts at expression of the placenta by Credé's method, before resorting to manual removal, unless, of course, alarming hemorrhage occurs (see Adherent Placenta). Pituitrin may be of service. Administer ergot after the birth of the placenta (see Part 11, Drugs).

Infant, Care of the.—See under Management of the Puerperium.

Diseases of the New Born.—See Diseases of the New-Born Infant.

Feeding.—See Part 1, General Medicine and Surgery.

Infection, Puerperal.—See Puerperal Infection.

Infectious Diseases.—L. *infec'tio.* See Diseases.

Inflammation of the Breast.—L. *inflamma're*, to set on fire. See Mastitis.

Uterus.—See Puerperal Infection.

Vagina.—See Vaginitis.

Inguinal Hernia of the Pregnant Uterus.—L. *in'guen*, groin. See Hernia, under Displacements of the Pregnant Uterus.

Insanity of Gestation.—L. *in*, not + *sanus*, sound; *gesta'tio*, pregnancy. Insanity occurs oftenest during the puerperium, next in frequency during lactation, and least often during pregnancy. It should be distinguished, says Hirst, from the temporary delirium of labor, the delirium of fever, delirium tremens, and pre-existing insanity.

Most of the patients recover reason in from three to six months; some die of infection or exhaustion.

Etiology.—Infection (*q.v.*); anæmia (due to hemorrhage or prolonged lactation, see Anæmia); physical and mental exhaustion; worry, and strong emotion; heredity; toxæmia (*q.v.*); chorea (*q.v.*).

Treatment.—Endeavor to ascertain and correct the cause (*q.v.*). Cases due to nervous instability, worry, or exhaustion should be benefited by rest, change of environment, wholesome food, fresh air, hydrotherapy, and perhaps iron, arsenic, or calcium (see Part 11.). The patient should be kept under careful supervision to prevent her doing harm to herself or others. She should not nurse her child.

For maniacal excitement and insomnia, hot packs are better than drugs, *e.g.*, morphine, gr. ¼; hyoscin, gr. $\frac{1}{80}$ to $\frac{1}{60}$; bromide, gr. xxx–xl, well diluted; paraldehyde, ʒi–ii, in diluted brandy.

Instruments, Obstetrical—L. *instru'ere*, to furnish; *ob-* in front of + *sto*, I stand. (See the Appendix, following Part 4.)

Interlocking of the Heads in Multiple Pregnancy.—See Multiple Pregnancy.

Internal Podalic Version.—See Podalic Version.

Intracranial Hemorrhage in the New-Born.—See Part 1.

Intra-Partum Hemorrhage.—See Hemorrhage, Intra-Partum.

Inversion of the Uterus.—See Part 2, Gynæcology.

Inverted Nipples.—See Nipples, Inverted.

Irritability of the Bladder.—See Bladder Irritability.

Ischuria.—Gr. *ἴοχειν* to check + *οὖρον* urine. See the Toxæmias.

Jaundice.—See Icterus

Joints, Relaxation of the Pelvic.—See Relaxation of the Pelvic Joints.

Rupture of the Pelvic.—See Rupture of the Pelvic Joints.

Kidney of Pregnancy.—See under Toxæmias of Pregnancy.

Labor, Adynamic Diseases Complicating.—Gr. *a* priv. + *δύναμις* might. See Adynamic Diseases Complicating Labor.

Cardiac Disease Complicating.—See Cardiac Disease.

Conduct of Normal.—See Conduct of Normal Labor.

Difficult or Prolonged.—See Dystocia.

Diseases Complicating.—See Complications of Labor.

Duration of.—See under Conduct of Normal Labor.

Heart Disease Complicating.—See Cardiac Disease.

Induction of.—See Premature Labor, Induction of.

Management of Normal.—See Conduct of Normal Labor.

Missed.—See Missed Labor.

Obstructed.—L. *obstruc'tio.* See Dystocia.

Pneumonia Complicating.—See Pneumonia Complicating Labor.

Premature.—See Abortion, Miscarriage, and Premature Labor, in Part 2.

Premature, Induction of.—See Premature Labor, Induction of.

Prolonged.—See Dystocia.

Stages of.—See under Conduct of Normal Labor.

Typhoid Fever Complicating.—See Typhoid Fever Complicating Labor.

Valvular Heart Disease Complicating.—See Cardiac Disease.

Laceration, Cervical.—L. *lacera're*, to tear; cervix, neck. See under Management of the Puerperium.

Laceration, Perineal.—Gr. *περίναιον*. See under Conduct of Normal Labor.

Large Child.—See Child, Large.

Laxatives.—L. *laxati'vus.* See under Constipation.

Leg, Milk.—See Phlegmasia Alba Dolens.

Leucorrhœa of Pregnancy.—Gr. *λευκός* white + *ῥοία* flow. See Vaginitis in Pregnancy.

Lightening.—See Stage of Pregnancy.

Lipuria.—Gr. *λίπος* fat + *οὖρον* urine. Lipuria is of no pathological import.

Litzmann's Obliquity.—L. *obli'quus*, slanting. See Ear or Parietal Bone Presentations.

Liver, Acute Yellow Atrophy of the.—See Acute Yellow Atrophy of the Liver, in Part 1.

Lochia.—Gr. *λοχία*. See under Management of the Puerperium.

Locked Twins.—See Multiple Pregnancy.

Malacosteon.—Gr. *μαλακός* soft + *ὀστέον* bone. See Osteomalacia, in Part 1.

Mammary Abscess.—L. *mam'ma*, breast, *absces'sus*, a going apart. See Mastitis.

Engorgement.—See Caked Breasts.

Inflammation.—L. *inflammar'e*, to set on fire. See Mastitis.

Management of Normal Labor.—See Conduct of Normal Labor.

Pregnancy.—Give the patient and nurse the following printed directions:

Hygiene of Pregnancy

1. Fresh air day and night; moderate daily exercise in the open air; frequent bathing; regular hours of eating and sleeping; rest before and after meals; the avoidance of lifting, reaching, or fatiguing labor, and exposure to cold and wet; daily brushing of the teeth before breakfast, with warm water and castile soap (see Dental Caries).

2. Clothing loose and supported from the shoulders; maternity corset; an abdominal support if the abdomen is pendulous; elastic bandages or stockings for varicose veins (*q.v.*).

3. Diet abundant, but plain.

4. Daily bowel movement. Employ, when necessary, compound laxative pill, one or two pills at bed-time; or aromatic fluid extract of cascara sagrada, one or two teaspoonfuls at bedtime; or compound licorice powder, one or two teaspoonfuls at bedtime (see Constipation Compl. Preg).

5. During the last two or three months, bathe the nipples night and morning, for the purpose of hardening them, with glycerol of tannin and water, equal parts (Hirst); or compound tincture of lavender, ℥ii, and glycerine, ℥ss (Edgar); or borax or boric

acid, one tablespoonful in a tumbler of alcohol and water, equal parts (J. W. Williams). Draw out the nipples gently every day, if retracted. The breast-pump may be used for this purpose.

6. During the first six months, send the physician a mixed twenty-four hour sample of urine once a month; during the next several months every two weeks, and during the last month every week. Empty the bladder, say at 7 A.M., throw the urine away, and save all subsequent voidings up to 7 A.M. the next morning. Keep the urine well corked in a cool place (see Urinalysis, in Part 1).

7. No sexual intercourse during the last month of pregnancy.

8. Notify the physician at once should any of the following symptoms occur:

(a) Scanty urine.
(b) Persistent headache.
(c) Disturbance of vision.
(d) Swelling of the feet or face.

} (see Toxæmias).

(e) Any loss of blood, no matter how slight (see Hemorrhage, Ante-Partum).

(f) Persistent constipation (*q.v.*). (After J. W. Williams.)

9. Things required at the time of labor: Three to five basins, cleansed with soap and water, rinsed, and scalded out; plenty of boiling water on the stove; a large pitcher, first cleansed with soap and water, rinsed and scalded out, then filled with boiling water which is allowed to cool, the pitcher being covered with a clean towel; bed-pan or douche-pan; two- or three-quart fountain syringe, or Davidson bulb syringe for rectal enemata; fifteen yards of gauze, two pounds of cotton batting, and two pounds of absorbent cotton for making bed-pads, or six prepared sanitary bed-pads (an expensive luxury that few of my patients have availed themselves of); two pieces of rubber sheeting or oil cloth, one 1 x 2 yards and the other 1 x 1½ yards (the larger sheet, at the time of labor, is placed over the mattress and covered with a bed sheet, over which is placed, under the buttocks of the patient, the smaller sheet; this is covered by a draw-sheet and a sterile bed-pad); four ounces of boric acid powder; 100 bichloride tablets; three or four dozen vulvar pads (absorbent cotton covered with gauze, six in a cloth package, sterilized at the time of labor by placing in an oven until the covering is scorched); waste bucket; an oilcloth or old rug to protect the floor beside the bed; small and large safety pins; binder for the mother, made of unbleached muslin, and about 1¼ yards long; long stockings, canton-flannel in winter, thin muslin in summer, to be worn at the time of labor; a warm blanket or warm soft flannel to receive the baby when born.

10. Baby's outfit: Four soft flannel undershirts, made with waists instead of bands, with long sleeves and high neck, and buttoned all the way in front; six 8 to 10 inch wide abdominal binders, made of soft flannel, not hemmed, but overstitched, and long enough to overlap one-third; four to six dozen cotton or old soft linen or stockinette or canton-flannel diapers, not hemmed or ironed (canton-flannel is least desirable); four to six pairs of knit woolen socks reaching nearly to the knee; flannel dress, opening in front, 25 inches from neck to hem; muslin slip (over the dress); knit woolen jacket; woolen shawl or wrap; light flannel cap; soft pillow, about 14 x 18 inches; bibs; soft towels; soft hair-brush; soft sponge; sweet oil; castile soap; bath thermometer; powder box containing lycopodium or fine starch powder, or compound talcum, or borated talcum, or rice-flour powder.

11. Remind the physician in regard to the examination four weeks before the expected date of confinement (see below).

12. At the commencement of labor the patient should receive a soapsuds enema (containing perhaps one teaspoonful of turpentine or two tablespoonfuls of glycerine to the quart), followed by a full, warm soap bath, cleansing thoroughly the external genitals and anus and surrounding skin (but not entering the vagina), and taking great care to rinse off with fresh, clean, warm water all soap, especially from the vulva. Then dry the skin thoroughly.

The physician should examine the patient four weeks before the expected date of confinement (see Stage of Pregnancy), note her general physical condition, measure the pelvis (see under Contracted Pelves), and ascertain the size, position, and presentation of the child (see the schema provided in the Appendix, following Part 4).

An internal examination, under anæsthesia if necessary, should be made if the head is not engaged in the last month in a primipara, if the pelvic outlet is contracted, if the patient limps, or has a deformity of the spine or legs, and if Baudeloque's diameter is 18.5 cm. or less.

A breech (*q.v.*), transverse (*q.v.*), or face presentation (*q.v.*) may be converted into a vertex presentation at this time.

If the patient has usually given birth with difficulty to very large children, the diet

(especially starches and sugars) should be restricted in the last two or three months of pregnancy.

Management of the Puerperium.—L. *pu'er*, boy + *par'ere*, to bear. Give the nurse the following printed directions:

Care of the Mother

1. After the patient has been made comfortable, following the completion of labor, give her a cup of milk, weak tea, cocoa, or broth, darken the room, and allow her to sleep.

2. Exclude visitors during the first ten days.

3. Change the vulval pads as often as they become soiled, and after each stool or urination, and before applying another pad cleanse the external genitalia from above downward with bichloride solution, 1 : 4000, or lysol, one teaspoonful to the quart, perhaps best poured from a pitcher with the patient on a douche-pan. (During the first four or five days the pads normally require changing no oftener than six times in the twenty-four hours.)

4. Place no pillow beneath the head for six hours after labor; and do not allow the patient to turn on her side for a day or two, to avoid the entrance of air into the uterine sinuses and possible air embolism. The semi-Fowler position may be adopted after the expiration of twenty-four hours for the purpose of better drainage.

5. If the patient has not urinated after twelve hours, get her in a sitting posture, apply hot cloths to the lower abdomen and vulva, and make the sound of trickling water; the binder may also be tightened. (The physician employs catheterization as a last resort, repeating it thrice daily, if necessary.)

6. Diet light and nourishing during the first five days:

First twenty-four hours: Milk, cocoa, clear bouillon or beef tea, milk toast, oatmeal or farina gruel.

Second and third days: Milk, cocoa, gruel, eggs boiled three minutes, milk or buttered toast, chicken fricassee, sweetbread, the hearts of raw or stewed oysters, flavored gelatin.

Fourth and fifth days: The same, with the addition of beefsteak, mutton chops, potatoes, rice, bread and butter, and fruit.

7. Administer, forty-eight hours after labor, a half bottle of effervescent citrate of magnesia; or one tablespoonful of Rochelle salts in solution, repeated in four hours if necessary; or one to two tablespoonfuls of castor oil. Thereafter, to secure a daily movement, give when required compound laxative pill one or two pills at bedtime; or aromatic fluid extract of cascara sagrada, one or two teaspoonfuls at bedtime; or compound licorice powder, one or two teaspoonfuls at bedtime; or enemata.

8. Cleanse the nipples with plain boiled water before, and with boric acid solution, gr. x to the ounce, after each nursing, and keep them covered with sterile gauze or flannel. Apply sterile sweet oil after each nursing to prevent cracks and fissures. Do not touch the nipples with the fingers. Report cracked nipples to the physician (see Nipples, Sore).

9. For painful distention and caking of the breasts, employ firm compression by means of a tight binder (see under Caked Breasts), which usually relieves the condition in twenty-four hours; or massage and milk the breasts through hot, moist flannel, allowing the milk to flow into the flannel. Avoid the breast-pump; but if used, assist its action by massage toward the nipple. For very great distention, administer Rochelle salts, a tablespoonful in solution, repeated in four hours, if necessary; and restrict liquids.

10. The mother should remain in bed until the uterus has disappeared within the pelvis, or about ten to fourteen days. Thereafter she may be allowed up one additional hour each day until she is up all day. At the end of three weeks she may walk about the room; and at the end of four weeks she may be allowed downstairs. She should do no work until after the end of the sixth week. (This is to prevent subinvolution, and its sequelæ, metritis, endometritis, retrodisplacement, and prolapse.)

Care of the Child

1. As soon as the baby has been received from the accoucheur, wrap it in warm, soft flannel, and place it in its crib, between blankets. Place hot water bottles near it, if it is cold or blue.

2. After the mother has been made comfortable, take the baby in a warm room, near the fire, anoint it with sweet oil, and bathe it with warm water (temperature 100° F.) and castile soap. Dry carefully, then dust the skin with powder in the folds and about the flexures and genitals; then powder the cord with sterile talcum, bismuth, or boric acid, and wrap it in sterile gauze or cotton. The mouth may perhaps be very gently cleansed with warm boiled water and a soft cloth, if deemed advisable.

Apply a soft flannel binder, reaching from

the pubes to the axillæ (8 to 10 inches wide), and pin it in back rather snugly. Over this put on a soft flannel undershirt, with long sleeves and high neck, and buttoned all the way in front; then a flannel dress opening in front, 25 inches from neck to hem; over this a muslin slip; then long woolen socks reaching nearly to the knee (cold feet may cause indigestion and colic); and finally the diaper.

The second full bath should not be given until the cord has separated.

3. After the cord has separated (four to seven days or longer), cover the stump with sterile talcum, bismuth, or boric acid powder, and apply a sterile gauze pad about two inches square and about one-quarter of an inch thick beneath the binder. Continue the use of the pad for one month, to prevent hernia.

4. Bathe the child once daily, at noon, near a fire, with warm water (not over 100° F., preferably 98° F.: use a bath thermometer), castile soap, and a soft sponge, after the cord has come off. Before this, sponge the baby in the lap.

5. On the sixth or seventh day after birth, begin daily retraction and cleansing of the prepuce. Two or three days may be required gradually to break up adhesions; then sterile vaseline, cotton, or gauze should be applied to prevent readhesion.

6. Nursing schedule:

	Nursings in 24 hours	Intervals during the day 6 a. m. to 9 p. m. Hours	Nursings between 9 p. m. and 6 a. m *i.e.*, at 2 a. m.
First day	4	6	1
Second day	6	4	1
Third day to end of 4th or 5th month	7	3	1
Fifth to 13th month	6	3	0

During the first two days, if the baby cries excessively, give a little warm, boiled water, or a very dilute solution of milk sugar or plain sugar (see Infant Feeding in Part 1). The infant is to be nursed until it is satisfied, or goes to sleep, or ceases to suck actively, but no longer than twenty minutes. Hold the child upright just before and after nursing, to allow of the escape of swallowed air. Alternate the breasts in nursing.

7. Keep the windows open at night and, take the baby out for an airing daily, in the warmest part of the day, except, of course, in very hot weather; but in winter not until after at least the first month.

8. Record the baby's weight once or twice a week (see under Infant Feeding).

The nursing woman should receive an abundant, plain diet, with milk at bedtime. avoiding tea, coffee, alcohol, spices, pastry, rich cakes, excessive sweets, and all indigestible articles. Regular hours of eating and sleeping, fresh air day and night, adequate rest and exercise, personal cleanliness, a daily bowel movement, and freedom from worry are important for both mother and child.

9. After the third or fourth month, substitute for the breast one or two feedings of bottle milk a day, and gradually wean the baby between the ninth and fourteenth months. The milk need not then be modified, and well-cooked cereals may also be given. Withdraw the breast at the rate of one additional daily nursing every two or three weeks until the breast is abandoned altogether.

The puerperium extends from the completion of labor to complete involution of the uterus, a period of six weeks. During this period the patient should be visited by the physician once or twice a day, if possible, for the first five days, then once every day or two until she is out of bed, then about three times during the third week, once or twice in the fourth week, and once again at the end of the sixth week (in the country, of course, this is not always possible). At each visit should be noted, in the mother, the pulse, temperature, odor, quantity and character of the lochia, action of the bladder and bowels, size of the womb ascertained by abdominal palpation, breasts and nipples, and after-pains; and, in the infant, feeding, digestion, sleeping, bowel and bladder movements, umbilicus, eyes, nose, mouth, skin, and development (see the Schema provided in the Appendix, following Part 4).

The upper normal temperature limit for the puerperium is placed at 100.4° F. If sepsis has not developed by the end of the fifth day it is not likely to occur (see Puerperal Fever, for the various causes of a puerperal elevation of temperature besides sepsis).

The normal lochia for the first three to five days after labor is red (lochia rubra); from then until about the tenth day it is grayish (lochia serosa); and after that, white (lochia alba). The persistence of a reddish color beyond several weeks indicates subinvolution (*q.v.*), or the retention of secundines. In putrid infection the lochia is putrid; in streptococcic infection it is often odorless. A marked diminution or increase in quantity accompanies the onset of sepsis. Night sweating is physiological.

Suckling the infant aids involution of the uterus and increases the after-pains; but the latter, as a rule, appreciably subside after twenty-four hours. For the treatment of severe after-pains, see After-Pains, Severe.

Should the uterus be found retroposed, between the third and fourth week, replace it (consult Part 2, Gynæcology, Retrodisplacements), and have the patient assume the knee-chest posture twice a day for five minutes at a time. This is very effectual, says Hirst. A pessary (see Part 2) may be employed, if required, in the sixth week, not before.

Make a careful examination at the end of the sixth week. Look for diastasis of the abdominal muscles (*q.v.*), relaxed vaginal outlet (beginning cystocele or retrocele, etc.), cervical tears (see below), displacement of the uterus (*q.v.*), abnormal uterine mobility and tenderness, prolapse, subinvolution, endometritis, and a ruptured coccygeal joint, which may give rise to coccygodynia (consult Part 2, Gynæcology, for the treatment of these conditions).

Perhaps most physicians have seen the injurious effects, local and constitutional, of unrepaired cervical tears. A recent tear, if not trivial, may be repaired as follows: With the patient in the lithotomy position, and the parts disinfected, pull down the cervix with bullet forceps and retract the vaginal walls with metal retractors. Now place one pair of bullet forceps in the anterior lip, and another pair in the posterior lip. With a very sharp scalpel, especially sharp at the point, denude the torn surface thoroughly by scraping off a superficial film of tissue, paying particular attention to the angles of the tear, but scrupulously avoiding the mucosa of the cervical canal. Then with a full-curved needle insert No. 2 chromic catgut sutures (usually one or two on each side), including the entire depth of the tear. Bring the edges of the tear together nicely without tension. An anæsthetic may often be dispensed with. The patient may be allowed about after the operation, and no after treatment is required. Old tears which contain scar tissue require, of course, a more extensive operation (after H. J. Boldt).

If the infant dies or must be weaned, the following measures for drying up the milk secretion, quoted from Edgar, are commonly employed:

1. "The application of a tight well-fitting breast-binder (*q.v.*), after the breasts have been lightly smeared with a solution of atropine sulphate in glycerine (gr. i to ʒi). This is repeated twice in the twenty-four hours."

2. "The cutting down of the liquid intake to a minimum."

3. "The causing of free watery stools with saline cathartics" (*q.v.* in Part 11).

4. "The avoidance of all massage of the breasts or the use of breast-pumps if possible." "Should the breasts become very hard and painful, the application of hot flannel stupes, and the massaging out of the milk secretion through and into the stupes is permissible."

J. W. Williams, however, advocates leaving the breasts absolutely alone. He says: "Within twenty-four hours after the last nursing, or on the third day if the child has not been suckled, the breasts become greatly engorged, and sometimes quite painful. But if they are not touched, the swelling soon subsides and the pain disappears within a few hours, after which the breasts gradually become smaller, and contain less and less milk, so that the entire process is over by the end of the third day." "A single hypodermic injection of morphine may be given if the pain is severe."

Manual Removal of the Placenta.—L. *ma'nus*, hand. See Adherent Placenta.

Mastitis.—Gr. *μαστός* breast + *-ιτις* inflammation.

Etiology.—Uncleanliness; sore nipples; skin pimples; caking of the breast; stomatitis in the infant.

Treatment.—Correct engorgement of the breasts (see Caked Breasts) as soon as it makes its appearance. If the nipple becomes sore, apply hot boric acid fomentations, and place the nipple at rest by the use of the nipple shield.

If suppuration threatens, stop suckling, withdraw the milk by means of the breast pump and massage toward the nipple through hot, moist compresses, cover the breast with cotton, and compress it firmly with a bandage.

As soon as fluctuation or a "dusky-red hue of the skin with œdema and fever" (Hirst) appears, make a single incision, or if need be, multiple incisions radiating from the nipple, open up every pocket of pus with the finger, and insert for drainage, fenestrated rubber tubes or gauze, covered with gauze and a firm binder. Change the dressing as often as necessary to keep the wound dry. If drainage tubes are employed, they should be replaced with gauze as soon as feasible. If desired, the cavity may be irrigated daily with warm sterile normal salt solution (ʒi ad Oi), or boric acid solution,

℥ii–iii ad Oi; but dry or moist gauze dressings alone seem preferable.

For milk fistula, employ compression of the breast and injections of tincture of iodine, or silver nitrate, 2 per cent., twice a week or oftener; or curette the fistulous tract; or dissect it out.

In submammary abscess, which is characterized by high fever, deep-seated pain, and the absence of reddening of the overlying skin, make two incisions at the periphery of the gland, one at the most dependent part (the patient upon her back), and the other a counter-opening, on the opposite side. Pass fenestrated drainage tubes through these openings with long dressing forceps, and irrigate daily.

Measurements, Pelvic.—See Contracted Pelves.

Melæna Neonatorum.—Gr. *μελαίνα* black, black bile; *νέος* new + L. *na'tus*, born. See Hemorrhage, General, in the New-Born.

Meningeal Hemorrhage in the New-Born.—Gr. *μῆνιγξ* membrane. See Hemorrhage, Intracranial, in the New-Born, in Part 1.

Meningocele, Cerebral.—See Part 1, General Medicine and Surgery.

Spinal.—See Spina Bifida, Part 1.

Mento-Iliac Presentations.—L. *men'tum*, chin; *il'ium*, haunch-bone. See Face Presentations.

Metreurynsis.—Gr. *μήτρα* uterus + *εὐρύνειν* to stretch: dilatation of the cervical canal with an inflatable bag. See Premature Labor, Induction of.

Metrophlebitis.—Gr. *μήτρα* womb + *φλέψ* vein + *-ιτις* inflammation. See Puerperal Infection.

Micromelia.—See Achondroplasia, in Part 1.

Micturition, Absent.—L. *micturir'e*, to urinate. See Toxæmias of Pregnancy.

Abundant.—See Polyuria.

Frequent.—See Bladder Irritability.

Scanty.—See Toxæmias of Pregnancy.

Milk Cyst.—See Galactocele.

Fistula.—L. *fis'tula*, pipe. See under Mastitis.

Leg.—See Phlegmasia Alba Dolens.

Modified.—See Infant Feeding, in Part 1.

Retention Cyst.—See Galactocele.

Milk Secretion, Deficient.—L. *secre'tio*, from *secer'nere*, to separate.

Causes.—Immaturity; advanced age; poor glandular development, due to heredity, infantilism, pressure from clothing, or fatty overgrowth; general ill-health; overexertion; insufficient nourishment; acute fevers; diarrhœa; hemorrhage; obesity; emotion (may poison the milk); perhaps nasal, pharyngeal, or bronchial catarrh; perhaps the return of menstruation; premature child-birth; mastitis.

Treatment.—Consider the cause. If the general health is below par, prescribe rest, an abundance of good food, perhaps a change of scene and tonics, such as iron, nux vomica, calcium, hypophosphites, or glycero-phosphates (see Part 11). The following foods are recommended as milk producers, viz., crabs, lobsters, shrimp, oysters, clams, fish, beef, eggs, milk, boiled fresh beets without vinegar, cereals, especially oatmeal, cocoa, chocolate, extract of malt (*q.v.*) and the heavier beers. (Consult also Infant Feeding, in Part 1).

Milk Secretion, Excessive; Polygalactia.—Gr. *πολύς* much + *γάλα* milk. Do not confuse this condition with galactorrhœa (*q.v.*).

Employ compression and support of the breasts by means of a firm binder, restriction of the diet and of fluids, laxatives, and if necessary, evacuation of the breasts by massage toward the nipple, or the breast-pump.

Miscarriage.—See Abortion, Miscarriage, and Premature Labor, in Part 2, Gynæcology.

Missed Labor.—The occurrence of uterine pains at term which disappear without eventuating in the birth of the child, the latter soon dying. Some form of obstruction may be causative. Similar symptoms occur in secondary abdominal (extra-uterine) pregnancy and in pregnancy in one horn of a bicornute uterus.

Treatment.—Induce labor (see Premature Labor, Induction of) as soon as the condition is diagnosed. Labor should, indeed, always be induced when pregnancy continues longer than two weeks beyond term.

Modifed Milk.—See Infant Feeding, in Part 1.

Mole, Hydatidiform.—See Hydatidiform Mole.

Morbus Maculosus Neonatorum.—L. *mor'bus*, disease; *ma'cula*, stain or spot; Gr. *νέος* new + L. *na'tus*, born. See Hemorrhagic Diseases of the New-Born, in Part 1.

Mother, Care of the.—See Management of the Puerperium.

Morning Sickness.—See Nausea and Vomiting of Pregnancy.

Multiple Pregnancy.—L. *mul'tiplex; præg'nans.* Interference is called for at the time of labor in about twenty-five per cent. of the cases.

Should both heads attempt to engage at one time, push up the looser head and extract the other with forceps. If this

proves impossible, insert the entire hand into the uterus and investigate matters. J. W. Williams says: "Occasionally it will be found advisable to apply forceps to the uppermost child and attempt to drag it past the other." Craniotomy (*q.v*) is rarely demanded.

If the cords become hopelessly entangled, cut one or both between ligatures and extract the children immediately.

In interlocking of the heads at the superior strait, in a head and breech presentation, push up the one presenting by the head and extract the other at once. If this is impossible, and if the one presenting by the head can not be dragged past the other, decapitate the latter, that is, the one presenting by the breech (see under Craniotomy).

If both children present by the breech, push up the upper and extract the lower.

As soon as the first child is born, cut the cord between clamps or ligatures, and at once ascertain the position and presentation of the second child, and correct any abnormality discovered. If the second child is not born in thirty minutes, extract it.

If copious hemorrhage follows the expulsion of the first child (due to separation of its placenta), extract the second child at once.

Should hemorrhage follow the birth of the children, attempt to express the placenta at once by Credé's method, and, if this fails, remove it manually (see Adherent Placenta).

Multiple pregnancy tends to inertia uteri and resulting post-partum hemorrhage (*q.v.*, for treatment).

Myalgia Uteri.—Gr. *μῦs* muscle + *ἄλγος* pain; L. *u'terus*, womb. See Myometrial Rheumatism.

Myoma Uteri.—Gr. *μῦs* muscle + *-ωμα* tumor; L. *u'terus*, womb. See Fibroid Tumors.

Myometrial Rheumatism or Myalgia.—Gr. *μῦs* muscle + *μήτρα* womb; *ῥευματισμός*; *ἄλγος* pain. A very painful myalgia of the uterine musculature, aggravated periodically by the intermittent uterine contractions of Braxton Hicks (which begin about the fourth month) and relieved at once by the administration of salicylates (*q.v.* in Part 11). (Hirst.)

Nägele's Obliquity.—L. *obli'quus*, slanting. See Ear or Parietal Bone Presentations.

Nägele's Pelvis.—See under Contracted Pelves.

Nausea and Vomiting of Pregnancy.—Gr. *ναυσία* seasickness; L. *vomitar'e*, to vomit; *præg'nans*, with child.

Nausea and vomiting of pregnancy, or "morning sickness," usually first appears about the sixth or seventh week, and usually disappears by the fourth month. It occasionally becomes very severe and intractable (pernicious vomiting of pregnancy).

Etiology.—Hysteria or suggestion; toxæmia, hepatic or nephritic; primiparity, especially in an elderly woman; immoderate sexual intercourse; reflex irritation, due to uterine displacement (*q.v.*), ovarian tumor or cyst, salpingo-oöphoritis, appendicitis (*q.v.*), chronic metritis, endometritis, cervicitis and endocervicitis, rigid cervix, multiple pregnancy, hydramnios (*q.v.*), splanchnoptosis, chronic gastritis, gastric ulcer (may result from vomiting), intestinal polypi, peritoneal adhesions; hypothyroidism.

Treatment.—Examine carefully into the cause of the trouble, and endeavor to correct any condition found that may be of importance (consult, if need be, Part 2, on Gynæcology, and Part 1, on General Medicine and Surgery). An abdominal support may give relief. The condition is probably, however, usually neurotic or toxæmic or both. Hypothyroidism as a possible cause should be borne in mind. The thyroid should normally hypersecrete during pregnancy. It increases the nitrogenous output in the urine.

See to it first that a correct hygienic regimen is observed, *e.g.*, adequate rest, exercise, and recreation, regular hours of eating and sleeping, rest before and after eating, fresh air day and night, frequent bathing, and regulation of the bowels.

In troublesome cases, one may prescribe the following regimen: At the moment of awakening, before raising the head from the pillow, have the patient eat a hard, dry biscuit, or dry toast, or drink hot black coffee. Beginning at 8 A. M., give every two hours, on the hour, until 6 P. M., concentrated, readily digestible foods in small amounts, *e.g.*, fresh, clean milk, plain or diluted with lime-water or soda-water, or barley-water, koumyss or matzoon (Part 11), cream, eggs raw or boiled three minutes, toast, weak hot tea or coffee, clam or oyster broth, raw oysters, expressed beef-juice, broiled meats, crisply fried bacon, somatose, panopepton, liquid peptonoids, a well-cooked cereal with cream; no water with meals. If certain foods are strongly craved, they may be allowed experimentally. Have the patient lie down after eating for half an hour or longer. Forbid sexual intercourse. Calcium may be prescribed to meet a supposed calcium deficiency. Rest and quiet are all-

important, and a calmative may be required:

℞ Sodii bromidi . . . . . ʒii ϑii (gr. x per dose)
Aquæ camphoræ
vel aquæ menthæ
piperitæ . . . . . ʒviii
M. Sig.—One tablespoonful four times a day.

It should be remembered that the case may be chiefly neurotic or hysterical and amenable to suggestion and moral suasion.

The symptomatic remedies enumerated under Vomiting, in Part 1, may be of service.

In obstinate cases, isolate the patient in a darkened room, in bed, administer large doses of bromide per rectum (gr. xl–lx, well diluted, every four hours, for several days), and allow no food by mouth, but substitute rectal feeding for several days (see Rectal Feeding, in Part 1).

Serum from a healthy pregnant woman may be tried. Corpus luteum extract is well recommended.

If the above-described measures are ineffectual, or if the case is acute and fulminant from the beginning, do not delay in terminating pregnancy (see Abortion; and Premature Labor, Induction of), for the mortality from exhaustion in these evidently toxæmic cases is high. Employ ether, or better, nitrous oxide and oxygen as an anæsthetic; and give copious enemata of normal saline solution (ʒi ad Oi) after the operation, and if need be, wash out the stomach and leave in a pint of sodium bicarbonate solution, ʒiss ad Oi.

Nephritic Toxæmia.—Gr. *νεφρός* kidney. See Toxæmias of Pregnancy.

Neuritis Complicating Pregnancy.—Gr. *νεῦρον* nerve + *-ιτις* inflammation. See Paralyses.

New-Born, Care of the.—See Management of the Puerperium.

Diseases of the.—See Diseases of the New-Born Infant.

Night-Sweats.—Night sweating during the puerperium is physiological.

Nipple-Shield, Use of the.—See under Nipples, Sore.

Nipples, Care of the.—See Nipples, Sore.

Cracked.—See Nipples, Sore.

Depressed.—L. *de*, down + *prem'ere*, to press. See Nipples, Inverted.

Fissured.—L. *fissu'ra.* See Nipples, Sore.

Inverted.—L. *in*, into + *ver'tere*, to turn. During the last month of pregnancy, attempt to draw the nipples out by means of the breast-pump. The child may possibly be able to nurse by means of the nipple-shield.

Nipples, Retracted.—L. *re*, back + *tra'here*, to draw. See Nipples, Inverted, above.

Sore.—**Prophylaxis.**—During the last two or three months of pregnancy, bathe the nipples, night and morning, for the purpose of hardening them, with glycerol of tannin and water, equal parts (Hirst); or compound tincture of lavender, ʒii, and glycerine, ʒss (Edgar); or borax or boric acid, one tablespoonful in a tumbler of alcohol and water equal parts (J. W. Williams). Some condemn the use of alcohol as too drying and thereby tending to promote cracking.

Cleanse the nipples with plain boiled water before, and with boric acid solution, gr. x to the ounce, followed by sterile sweet oil, after each nursing, and keep them covered with sterile gauze or flannel. Do not touch the nipples with the fingers.

Treatment.—Employ a nipple-shield in nursing. Place the shield tightly upon the breast, and partly fill it with milk expressed by the fingers before putting the child to it. After each nursing take the nipple-shield apart, cleanse it with cold water, scald it, and keep it immersed in a clean tumbler of saturated boric acid solution (4 per cent.). The best nipple-shield is the large rubber one, covering almost the entire breast.

After each nursing, cleanse the sore nipple with boric acid solution, dry thoroughly, and apply one of the following preparations, viz., bismuth subnitrate and castor-oil, equal parts; or compound tincture of benzoin; or silver nitrate, gr. x ad ʒi; or zinc oxide; or orthoform in powder or alcoholic solution. Expose the nipples to the air.

If it should be necessary to suspend nursing from the breast, express the milk by means of massage or the breast-pump.

The application of a 5 per cent. anæsthesin salve to the fissure just before nursing materially mitigates the pain.

Normal Labor, Management of.—See Conduct of Normal Labor.

Pregnancy, Management of.—See Management of Pregnancy.

Puerperium, Management of.—See Management of the Puerperium.

Nursing.—See Infant Feeding, in Part 1.

Obliquely Contracted Pelves.—L. *obli'quus*, slanting. See under Contracted Pelves,

Obstetrical Outfit.—L. *ob*, in front of; *sto*, I stand. See the Appendix, following Part 4.

Obstructed Labor.—See Dystocia.

Occipito-Posterior Presentations.—L. *oc'ciput*, back of the head; *poster'ius*, behind; *præsenta'tio*. **Frequency.**—1.5 to 16.8 per cent. In 1 to 7 per cent. of these cases the

occiput, during labor, rotates into the hollow of the sacrum, instead of normally toward the symphysis. The causes of such abnormal rotation are as follows: weak expulsive power, due to abdominal and uterine inertia; undue resistance, due to a small pelvis, particularly the kyphosis, generally contracted, and Nägele pelves, and to a large head; small resistance, as in a large pelvis, small head, or a relaxed pelvic floor; imperfect flexion of the head; abnormal projection of the lumbar and sacral vertebræ; prolapse of the hand or foot anteriorly, preventing forward rotation.

Treatment.—Spontaneous delivery is the rule in occipito-posterior presentations. J. W. Williams does "not consider it advisable to attempt to convert posterior presentations into other positions during the course of labor, except when the forceps is to be applied." He says: "Even when the occiput rotates into the hollow of the sacrum, the prognosis is not bad, as in the majority of cases spontaneous delivery occurs." His practice is to assist labor with forceps only "when convinced that the best interests of the mother and child will be subserved by prompt delivery." "On the other hand when the head is arrested at the superior strait in a posterior position, version (*q.v.*) should be resorted to as soon as one is convinced that spontaneous advance will not occur, provided, of course, that the operation is not contraindicated by disproportion between the size of the head and the pelvis" (Williams). Other contraindications against version are the draining away of the liquor amnii, tetanic contraction of the upper uterine segment, and dangerous thinning of the lower uterine segment.

If it is deemed advisable during labor to take active steps to promote anterior rotation, have the patient lie on that side "toward which the fetal back is directed, in the exaggerated lateral prone position, with a pad under the lower buttock," in order "to secure perfect flexion of the head." If the pelvic floor does not furnish sufficient resistance to maintain flexion of the head, insert two fingers in the vagina, or a single blade of the forceps, "imitating the shape and direction of the pelvic floor and used as a lever to pry the occiput forward" (Hirst). One may also press upon the forehead, during a pain, and draw down the occiput. A single large dose of quinine (gr. xv), or a hypodermic or intramuscular injection of pituitrin (0.5 c.c.) may be useful in increasing the expulsive power.

It is possible in some cases to turn the occiput forward with the hand in the birth canal while an assistant rotates the shoulder externally and maintains flexion of the head by pressure upon the fundus. If the occiput tends to slip back from the corrected position, it may be held in place by means of a clamp or volsellum forceps affixed to the child's scalp. Extraction with forceps (*q.v.*) should then be performed. Rotation of the head may be accomplished by means of the forceps, which are applied at first as though the occiput were anterior instead of posterior; then, after rotation to a transverse or anterior position has been accomplished, the forceps are removed and reapplied. If rotation with forceps is impossible, extract with the occiput posterior.

Œdema of the Face.—Gr. *οἴδημα* swelling. See Toxæmias of Pregnancy.

of the Feet.—See Toxæmias of Pregnancy; Phlegmasia Alba Dolens; and Varicose Veins of the Legs.

of the Vulva.—See Part 2, Gynæcology.

Œdema Neonatorum.—See Part 5, Skin Diseases.

Oliguria.—Gr. *ὀλίγος* scanty + *οὖρον* urine. See the Toxæmias.

Ophthalmia Neonatorum.—Gr. *ὀφθαλμός* eye; Gr. *νεός* new + L. *na'tus*, born. **Causative Agents.**—Gonococcus, colon bacillus, staphylococci, streptococci, pneumococcus, influenza bacillus. Purulent conjunctivitis in infants is due, in one-third of the cases, at least, to organisms other than the gonococcus. (Williams and Rosenberg.)

Treatment.—Douche the eye very gently, three or four times daily or oftener (taking great care not to abrade the corneal epithelium), with a warm saturated solution of boric acid (gr. xviii to the ounce), or potassium permanganate, 1 : 5000, or bichloride of mercury, 1 : 10,000, or cyanide of mercury, 1 : 5000, using pledgets of absorbent cotton, or a fountain syringe with a bulbous-tipped nozzle, or an irrigating bottle (Fig. 95), or a hollow lid-retractor. Once or twice daily, drop in the eye, silver nitrate, 2 per cent., protargol, 10 to 20 per cent., or argyrol, 30 to 50 per cent. Anoint the lid margins with vaseline.

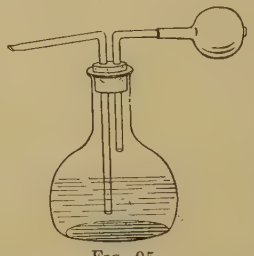


Fig. 95.

For œdema of the lids, apply ice-water compresses every hour or two for ten to thirty minutes until the swelling subsides.

Should the cornea become hazy or cloudy,

stop the ice compresses at once, and apply heat, and instil once or twice daily a sterile solution of atropine, gr. i to the ounce. Should ulceration supervene, employ irrigations of formalin, 1 : 10,000, and keep the pupil dilated with atropine.

As convalescence sets in, reduce the strength of the silver solutions, and later substitute astringents:

℞ Zinci sulphatis..... gr. ss
Acidi borici..... gr. x
Aquæ destillatæ..... ʒi
M. Sig.—Drop into the eyes t.i.d.

Gonorrhœal ophthalmia is seldom cured under four to six weeks. Impairment of vision due to corneal changes results in many cases in spite of all care.

Prophylaxis.—Instil into the eyes, immediately after birth, two drops of a 5 per cent. solution of protargol, or 1 to 2% silver nitrate

Osteomalacia.—See Part 1, General Medicine and Surgery.

Outfit, Obstetrical.—See the Appendix, following Part 4.

Ovarian Tumors Complicating Pregnancy and Labor.—L. *ovar'ium*, ovary; *tu'mor*, from *tu'mere*, to swell. If diagnosed before the last month of pregnancy, remove the tumor through the abdomen; but if first detected during the last month, do not interfere until term, in order to avoid an abdominal cicatrix which is apt to rupture at the time of labor. (J. W. Williams.)

At the time of labor, try very gently, for fear of rupturing the cyst, to push it up out of the pelvis. If this fails, perform Cæsarean section (*q.v.*), and remove the tumor.

Should labor terminate successfully without the necessity of removing the tumor, watch the patient carefully during the puerperium, and open the abdomen on the first appearance of untoward symptoms (torsion of the pedicle; gangrene). In any case, remove the tumor as soon as feasible.

Pains, After, Severe.—See After-Pains, Severe.

Palpitations of the Heart.—L. *palpita'tio*. See Cardiac Disease.

Paralyses, Birth.—See Birth Palsies, in Part 1.

Paralyses Complicating Pregnancy.—Gr. *πάρα* beside + *λύειν* to loosen. Cerebral or spinal hemorrhage or œdema may occur as a result of toxæmia and eclampsia.

Paraplegia may be caused by spinal disease or pressure of the fœtal head upon the pelvic nerves.

Cerebral embolism may follow phlebitis of the lower extremities or endocarditis. Cerebral thrombosis may occur as a result of infection.

Neuritis may be due, possibly, to toxæmia.

Deafness may occur as a result of paralysis of the auditory nerve.

Amblyopia or amaurosis may be due to renal insufficiency, or to reflex contraction of the retinal artery, or to general anæmia.

Treatment.—Attend to the cause. For motor paralysis employ strychnine, iron (Part 11), electricity, and massage. It may be necessary to induce labor, following which the paralysis may disappear (see Premature Labor, Induction of).

Parametritis, Pelvic Cellulitis.—Gr. *παρά* near + *μήτρα* womb: Inflammation of the cellular tissue about the uterus (see Puerperal Infection).

Parauterine Phlebitis.—Gr. *παρά* near + L. *u'terus*, womb; Gr. *φλέψ* vein + *-ιτις* inflammation. See Puerperal Infection.

Parietal Bone Presentations.—See Ear or Parietal Bone Presentations.

Pelvic Contraction.—L. *pel'vis*, basin. See Contracted Pelves.

Deformity.—See Contracted Pelves.

Cellulitis.—L. *cel'lula*, minute cell + Gr. *-ιτις* inflammation. See Puerperal Infection.

Joints, Relaxation of the.—See Relaxation of the Pelvic Joints.

Rupture of the.—See Rupture of the Pelvic Joints.

Measurements.—See Contracted Pelves.

Peritonitis.—Gr. *περί* around + *τείνειν* to stretch + *-ιτις* inflammation. See Puerperal Infection.

Pendulous Abdomen.—See Abdomen, Pendulous.

Perineal Tears.—Gr. *περίναιον*. See under Conduct of Normal Labor.

Period of Pregnancy.—Gr. *περί* around + *ὁδός* way. See Stage of Pregnancy.

Peritonitis, Pelvic.—Gr. *περί* around + *τείνειν* to stretch; L. *pel'vis*, basin. See Puerperal Infection.

Pernicious Anæmia Complicating Pregnancy.—L. *pernicio'sus*. See Anæmia.

Vomiting of Pregnancy.—See Nausea and Vomiting of Pregnancy.

Phlebitis, Crural.—Gr. *φλέψ* vein + *-ιτις* inflammation; L. *crus*, *cru'ris*, leg. See Phlegmasia Alba Dolens.

Uterine and Parauterine.—Gr. *φλέψ* vein + *-ιτις* inflammation; L. *u'terus*, womb. See Puerperal Infection.

Phlegmasia Alba Dolens; Milk Leg; White Leg.—Gr. *φλεγμασία* heat inflammation; L. *al'ba*, white; *do'lens*, painful. The

occurrence, usually during the puerperium, of pain, œdema, and elevation of temperature in one of the lower extremities, due to venous thrombosis.

The condition usually heals in several weeks or months, but suppuration, gangrene, pyæmia, pulmonary embolism, and chronic congestion of the limb are possibilities.

Etiology.—Uterine infection; local infection; mechanical compression; anæmia and debility.

Treatment.—See Thrombosis, Venous, in Part 1, General Medicine and Surgery.

Piles.—See Hemorrhoids.

Placenta, Adherent.—L. *placen'ta* a flat cake. See Adherent Placenta.

Expression of the.—L. *expres'sio*, pressing out. See Adherent Placenta.

Manual Removal of the.—L. *man'us*, hand. See Adherent Placenta.

Placenta Prævia.—L. *placen'ta* a flat cake; *præ-* before + *vi'a*, way. Implantation of the placenta in the lower uterine segment, more or less overlapping the internal os; frequency, about one in 160 to 1000.

The condition is usually first manifested after the seventh month of pregnancy, but sometimes not until the onset of labor, by repeated and usually copious hemorrhages; and internal examination usually reveals a patulous, somewhat dilated cervical canal, and the sponge-like, boggy or gritty maternal face of the placenta at the internal os. The cervix should be dilated, under anæsthesia if necessary, to palpate the better.

Placenta prævia predisposes to abortion, malpresentations, uterine inertia, adherent placenta, and infection.

The Prognosis is serious for both mother and child.

Treatment.—Empty the uterus as soon as the condition is diagnosed. Shave and cleanse the external genitalia and neighboring skin thoroughly with castile or green soap and warm water, and cleanse the vagina with soap and water, followed by bichloride solution, 1:4000. Cover the lower limbs and abdomen with sterile sheets, exposing only the vulva, and under ether dilate the cervix gently and slowly with the fingers as far as convenient, employing Edgar's gentle bimanual dilatation, if desired. Then with the two fingers of the right hand within the cervix push the presenting head away while the left hand on the abdomen pushes the upper pole of the fœtus around toward the pelvis (bipolar version of Braxton Hicks). Now perforate the membranes beyond the margin of the placenta, if possible, otherwise through the placenta, seize and bring down a foot, and extract it "until the knee appears at the vulva"; then withdraw the anæsthetic. Hemorrhage is controlled by gentle traction upon the leg, the breech serving as a tampon. Wait patiently for the cervix to dilate, occasionally exerting very gentle traction upon the leg to hasten dilatation. When dilatation is practically complete, not before, extract the child.

In the absence of any great hemorrhage, the child's interests are best subserved by the employment of Voorhees's or Champetier de Ribes's, or Braun's metreurynter of large size (500 c.c.), with a two-pound weight attached. The cervix is first dilated digitally to the width of two fingers, the membranes or placenta perforated, and the bag placed within the amniotic sac and filled with sterile normal salt solution (℥i ad Oi). After the bag is expelled or easily removed, forceps are applied (*q.v.*) or internal podalic version (*q.v.*) and extraction performed. Shatz regards metreurynsis as superfluous.

If the cervix is exceptionally rigid, or if the condition is first detected during labor by a profuse outpouring of blood, and the cervix is not sufficiently dilated, one may, under strict asepsis, pack the cervix and vagina, or the vagina alone, tightly and fully with gauze bandage. Barnes advises separating the placenta around and beyond the internal os with the fingers before inserting the pack. After a few hours the os should be sufficiently dilated. Then anæsthetize the patient and proceed as first directed. The tampon should, however, be avoided, because of the increased danger of infection.

If during labor the cervix is well dilated when hemorrhage occurs, one may perforate the membranes and bring down the head with forceps, after which the latter may be removed. If this is not feasible, resort to internal podalic version.

If hemorrhage persists after the birth of the child, attempt to express the placenta by Crede's method, and if this is not quickly successful, remove it manually (see Adherent Placenta). Then knead the uterus, etc., (see Hemorrhage, Post-Partum). Reynolds and Newell advocate packing the uterus with gauze in all cases, owing to the tendency to insufficient contraction of the lower uterine segment. The pack should be removed at the end of twelve to twenty-four hours, and the uterus irrigated. The pack greatly increases the liability to infection.

Pituitrin (*q.v.* in Part 11) may be of value.

The above-described treatment is that

commonly advised, but in cases in which the placenta covers the entire internal os and in the presence of a rigid cervix, the classical Cæsarean operation (*q.v.*) is probably best for both mother and child.

Placenta, Premature Separation of the Normally Situated.—See Premature Separation of the Normally Situated Placenta.

Previa.—See Placenta Prævia.

Removal of the.—See Adherent Placenta.

Pneumonia Complicating Labor.—Gr. *πνεύμων* lung. See Adynamic Diseases Complicating Labor.

Podalic Version.—Gr. *πούς* foot; L. *ver'sio*, turning. **Indications.**—Transverse presentations; floating head presentations which do not promise spontaneous engagement and delivery; sometimes ear, brow, or face presentations; usually prolapse of the extremities or cord; often placenta prævia; often fœtal deformity; perhaps rupture of the uterus, eclampsia, and hemorrhage.

Contraindications.—Firm engagement of the presenting part; marked pelvic contraction: hydrocephalus; early rupture of the membranes and draining off of the liquor amnii; tetanic contraction of the uterus not relieved by anæsthesia; dangerous thinning of the lower uterine segment as evidenced by the high position of Bandl's contraction ring.

I. Internal Podalic Version.—Under strict asepsis (*q.v.*), the cervix being completely dilated, rupture the membranes, and insert the right or left hand, according as the back of the child is directed to the right or left. If the head is presenting, attempt to grasp, if possible, the anterior foot. In transverse presentations, seize the lower foot if the back is directed anteriorly, the upper foot if the back is directed posteriorly, so as to bring the back against the symphysis pubis. If, in transverse presentations, an arm prolapses, attach a fillet to it, to prevent it from becoming extended over the head during extraction.

During extraction an assistant should exert firm pressure upon the fundus uteri.

II. Combined External and Internal Version (Braxton Hicks Bipolar Method).—This method may be employed when the cervix is dilated sufficiently to admit two fingers, and the membranes are unruptured. The external hand upon the abdomen pushes the upper fetal pole toward the pelvis, while the internal fingers pusn the lower pole in the opposite direction. Strict asepsis should be observed.

Polygalactia.—See Milk Secretion, Excessive.

Polyuria.—Gr. *πολύς* much + *οὖρον* urine. Polyuria occurs physiologically in pregnancy. Sometimes it is very great.

Posterior Occipital Presentations.—See Occipito-Posterior Presentations.

Parietal Bone Presentations.—See Ear Presentations.

Post-Partum Hemorrhage.—See Hemorrhage, Post-Partum.

Posture, Walcher's Hanging.—See under Contracted Pelves.

Pre-Eclamptic Toxæmia.—See Toxæmias of Pregnancy.

Pregnancy, Accidental Complications of.—See Complications of Pregnancy

Amaurosis during.—L. from Gr. *αμαυρόειν* to darken; blindness. See Paralyses Complicating Pregnancy.

Amblyopia during.—Gr. *ἀμβλύς* dulled + *ὤψ* eye: dimness of vision. See Paralyses Complicating Pregnancy.

Anæmia Complicating.—See Anæmia Complicating Pregnancy.

Anorexia Complicating.—See Anorexia.

Anteflexion of the Uterus in.—L. *an'te*, before + *flex'io*, bend. See Displacements of the Pregnant Uterus.

Anteversion of the Uterus in.—L. *an'te*, before + *ver'sio*, turning. See Displacements of the Pregnant Uterus.

Appendicitis Complicating.—See Appendicitis.

Cardiac Disease Complicating.—See Cardiac Disease.

Chloasma.—See Chloasma.

Chorea Complicating.—See Chorea.

Complications of.—See Complications of Pregnancy.

Constipation Complicating.—See Constipation.

Deafness Complicating.—See Paralyses Complicating Pregnancy.

Dental Caries Complicating.—See Dental Caries.

Dermatitis Herpetiformis Complicating.—See Dermatitis Herpetiformis, in Part 5.

Diagnosis of.—See Diagnosis of Pregnancy.

Diet in.—See Management of Pregnancy.

Displacements of the Uterus in.—See Displacements of the Pregnant Uterus.

Duration of.—See Stage of Pregnancy.

Dyspepsia Complicating.—See Dyspepsia.

Emphysema Complicating.—See Emphysema.

Estimation of the Duration of.—See Stage of Pregnancy.

Pregnancy, Extra-Uterine.—See Extra-Uterine Pregnancy, in Part 2, Gynæcology.

False.—See Diagnosis of Pregnancy,

Fibroid Tumors Complicating.—See Fibroid Tumors Complicating Pregnancy.

Gingivitis Complicating.—See Gingivitis.

Glycosuria in.—See Glycosuria.

Gonorrhœa Complicating.—See Gonorrhœa,

Heart Disease Complicating.—See Cardiac Disease.

Hematuria Complicating.—See Hæmaturia.

Hemorrhage During.—See Hemorrhage, Ante-Partum.

Hemorrhoids Complicating.—See Hemorrhoids.

Hepatic Toxæmia of.—See Toxæmias of Pregnancy.

Hernia of the Uterus in.—See under Displacements of the Pregnant Uterus.

Herpes Gestationis Complicating.—Gr. ἕρπης creeping; L. *gestat'io* pregnancy. See Dermatitis Herpetiformis, in Part 5, Skin Diseases.

Hygiene of.—See Management of Pregnancy.

Impetigo Herpetiformis Complicating. See Impetigo Herpetiformis, in Part 5.

Icterus in.—See Icterus in Pregnancy.

Indigestion Complicating.—L. *in*, not + *dis*, apart + *ge'rere* to carry. See Dyspepsia.

Insanity of.—See Insanity of Gestation.

Jaundice in.—See Icterus in Pregnancy.

Kidney of.—See Toxæmias of Pregnancy.

Leucorrhœa in.—See Vaginitis in Pregnancy.

Management of.—See Management of Pregnancy.

Multiple.—See Multiple Pregnancy,

Nausea and Vomiting of.—See Nausea and Vomiting of Pregnancy.

Nephritic Toxæmia of.—See Toxæmias of Pregnancy.

Neuritis Complicating.—Gr. νεῦρον nerve + -ιτις inflammation. See Paralyses.

Normal, Management of.—See Management of Pregnancy.

Paralyses Complicating.—See Paralyses.

Pelvic Joint Relaxation in.—See Relaxation of the Pelvic Joints.

Period of.—See Stage of Pregnancy.

Pernicious Anæmia Complicating.—See Anæmia.

Pregnancy, Pernicious Vomiting of.—See Nausea and Vomiting of Pregnancy.

Pre-Eclamptic Toxæmia of.—See Toxæmias of Pregnancy.

Prolapse of the Uterus in.—L. *pro*, before + *la'bi*, to fall. See Displacements of the Pregnant Uterus.

Pruritus in.—See Pruritus.

Ptyalism Complicating.—See Salivation.

Pyelitis and Pyonephrosis of.—See Pyelitis and Pyonephrosis of Pregnancy.

Relaxation of the Pelvic Joints in.—See Relaxation of the Pelvic Joints.

Retrodisplacement of the Uterus in.—See Displacements of the Pregnant Uterus.

Salivation Complicating.—See Salivation.

Signs of.—See Diagnosis of Pregnancy.

Skin Diseases Complicating.—See Skin Diseases.

Stage of.—See Stage of Pregnancy.

Symptoms of.—See Diagnosis of Pregnancy.

Syphilis Complicating.—See Syphilis Complicating Pregnancy.

Toothache in.—See Dental Caries.

Toxæmias.—See Toxæmias of Pregnancy.

Tuberculosis Complicating.—See Tuberculosis Complicating Pregnancy.

Twin.—See Multiple Pregnancy.

Vaginitis Complicating.—See Vaginitis.

Valvular Heart Disease Complicating.—See Cardiac Disease.

Vomiting of.—See Nausea and Vomiting of Pregnancy.

Premature and Delicate Infants, Care of.—See Part 1, General Medicine and Surgery.

Detachment of the Normally Situated Placenta.—See Premature Separation, etc.

Labor.—See Abortion, Miscarriage, and Premature Labor, in Part 2, Gynæcology.

Premature Labor, Induction of.—L. *in*, in + *du'cere* to lead. The artificial termination of pregnancy after the twenty-eighth week or sixth month, that is, when the fœtus is viable, or capable of living outside the uterus.

Indications.—Placenta prævia; premature detachment of the normally situated placenta; intractable toxæmia or renal insufficiency; eclampsia; broken cardiac compensation; grave chorea; grave neuritis; grave diabetes; occasionally pernicious anæmia or leukæmia; pyelonephrosis;

marked hydramnios; hydatidiform mole; the continuation of pregnancy two weeks beyond term.

Technique.—Shave and cleanse the external genitalia and neighboring skin thoroughly with castile or green soap and warm water, cleanse the vagina with soap and water, followed by bichloride solution, 1 : 4000, and cover the lower limbs and abdomen with sterile sheets, exposing only the vulva. Cleanse the hands.

Insert into the cervix and high up into the uterus between the membranes and the uterine wall, several stiff bougies (No. 17 French or 10 to 12 English), or thick walled rubber catheters with stylets. Then pack the vagina lightly with gauze to keep the bougies in place. The bougies are sterilized by prolonged soaking in bichloride solution. In place of the bougies one may pack the cervix and vagina with gauze bandage.

A quicker method is as follows: Dilate the cervix to a sufficient width by means of Hegar's or Goodell's dilators or the fingers. Then introduce a Champetier de Ribes, Voorhees, Pomeroy, Braun, or Barnes rubber bag smeared with sterile vaseline or glycerine. The Voorhees bag is well recommended. The bag is rolled up and grasped with dressing forceps. The left index and middle finger are introduced into the vagina, flexor surface up, and the bag is guided to the cervical opening along these fingers, which also hold the bag in position while the forceps are withdrawn. With the fingers still holding the bag in place, an assistant fills the bag with sterile water, or normal salt solution (℥i ad Oi), or lysol, 0.5 per cent., by means of a piston or Davidson syringe, and the tube is clamped with an artery forceps or tied with sterile tape (R. T. La Vake). A two-pound weight may be attached to hasten dilatation, but the risk of tearing the cervix is thereby increased. The dangers attendant upon the use of bags are (1) sepsis, (2) cervical laceration, and (3) displacement of the presenting part and prolapse of the cord.

Bossi's four-branch dilator may be used in place of the bags, if greater speed is demanded; or Harris's method, or Edgar's gentle bimanual dilatation may be practiced.

In the presence of a rigid cervix, either vaginal or abdominal Cæsarean section (*q.v.*) is indicated. The former operation (vaginal hysterotomy) is performed as follows: Under good exposure with broad-bladed specula, the cervix is drawn to the vulva by means of two lateral heavy traction sutures, a median longitudinal incision is made through the anterior vaginal wall about two to three inches long, up to the utero-vaginal junction, the bladder is separated entirely from the anterior surface of the uterus with the gauze-covered finger, up to the level of the internal os, where the peritoneum comes in sight, the peritoneum is pushed up, and the anterior cervix is divided with stout scissors up beyond the internal os for a distance of from three to four and a half inches. The membranes are now ruptured and the child extracted. One should wait for the spontaneous loosening of the placenta, unless immediate removal is demanded.

After the completion of delivery, the wound is closed from above downward with deep interrupted and superficial continuous catgut sutures.

After the end of the seventh month of pregnancy, an additional posterior cervical incision is required (J. W. Williams). The posterior incision is made first. A transverse incision is first made at the utero-vaginal junction, and the peritoneum pushed back from the uterus; then the cervix is divided in the median line for a distance of about two inches.

Premature Separation of the Normally Situated Placenta.—**Frequency.**—One in 118 to 900 pregnancies.

This accident usually occurs near or at the time of labor. There are severe pain and usually external bleeding. In some instances, however, the hemorrhage is concealed, and the condition is then manifested by excruciating pain, hard distention of the uterus, rapid pulse, acute anæmia, and shock.

Placenta prævia is excluded by internal examination. Rupture of the uterus is distinguished by its occurrence late in labor, after the membranes have ruptured, and by recession of the presenting part and contraction of the uterus.

The Prognosis is serious for both mother and child.

Etiology.—Traumatism (external violence or physical exertion); emotion; decidual disease; chronic pelvic congestion; profound anæmia; great debility; syphilis; multiparity; uterine abnormality, such as uterus bicornis; disease and death of the fœtus; possibly nephritis; possibly toxæmia; possibly uterine infection; " prolongation of pregnancy with irregular uterine contractions "; too rapid escape of amniotic fluid in hydramnios; short umbilical cord; partial emptying of the uterus in the birth of the first child of a twin pregnancy.

Treatment.—Unless the hemorrhage is slight, the uterus should be emptied as speedily as possible, under strict asepsis (*q.v.*). If the cervix is soft and patulous, it may be dilated manually, or by means of rubber bags (see under Premature Labor, Induction of), or Bossi's four-branch dilator. Perform internal podalic version (*q.v.*) if the presenting part is not engaged. If the head is engaged, try forceps (*q.v.*); but if rapid delivery can not thereby be accomplished, perform craniotomy (*q.v.*). Have an assistant follow the uterus down during labor and delivery. Should hemorrhage follow the birth of the child, remove the placenta promptly by Credé's method or manually (see Adherent Placenta), and inject ergot, or pituitrin (see Part 11). For the treatment of post-partum hemorrhage consult Hemorrhage, Post-Partum.

"If labor has not yet set in, the symptoms are urgent, and the patient is in a hospital, abdominal (*q.v.*) or vaginal (*q.v.*) Cæsarean section should be performed" (J. W. Williams). A rigid cervix is another indication for vaginal hysterotomy or abdominal Cæsarean section.

Presentations, Acromio-Iliac.—L. *præsenta'tio*; Gr. ἄκρον point + ὦμος shoulder; L. *il'ium*, haunch-bone. See Transverse Presentations.

Anterior Fontanelle.—L. *an'te*, before; Fr. *fontanelle*, little fountain. See Bregma Presentations.

Anterior Parietal Bone.—See Ear or Parietal Bone Presentations.

Breech.—See Breech Presentations.

Bregma.—See Bregma Presentations.

Brow.—See Brow Presentations.

Chin.—See Face Presentations.

Ear.—See Ear Presentations.

Face.—See Face Presentations.

Fontanelle (Anterior or Greater.)—Fr. *fontanelle*, little fountain; L. *an'te*, before. See Bregma Presentations

Mento-Iliac.—L. *men'tum*, chin; *il'ium*, haunch-bone. See Face Presentations.

Occipito-Posterior.—See Occipito-Posterior Presentations.

Parietal Bone.—See Ear or Parietal Bone Presentations.

Posterior Occipital.—See Occipito-Posterior Presentations.

Posterior Parietal Bone.—See Ear or Parietal Bone Presentations.

Sacro-Iliac.—L. *sa'crum*, sacred; *il'ium*, haunch-bone. See Breech Presentations.

Shoulder.—See Transverse Presentations.

Presentations, Transverse.—See Transverse Presentations.

Prolapse of an Arm.—See Arm, Prolapse of an.

Prolapse of the Cord.—See Cord, Prolapse of the.

Parturient Uterus.—See Displacements of the Parturient Uterus.

Pregnant Uterus.—See Displacements of the Pregnant Uterus.

Puerperal Uterus.—See Displacements of the Puerperal Uterus.

Prolonged Labor.—See Dystocia.

Pruritus Complicating Pregnancy.—L. *prurir'e*, to itch. See Part 2, Gynæcology.

Pseudocyesis.—Gr. ψευδής false + κύησις pregnancy. See Diagnosis of Pregnancy.

Ptyalism Complicating Pregnancy.—Gr. πτύαλον spittle. See Salivation.

Pubiotomy.—L. *púbis* + Gr. τέμνειν to cut. **Contraindications.**—A conjugata vera of 7 cm. or less; infection; dying or dead child.

Technique.—Empty the bladder and rectum, and shave and cleanse the external genitalia and neighboring skin thoroughly with castile or green soap and warm water, and cleanse the vagina with soap and water, followed by bichloride solution, 1 : 4000. Dry the external parts carefully, and apply tincture of iodine to the site of operation. Cover the lower limbs and abdomen with sterile sheets, exposing only the pubes.

Under ether anæsthesia, make a transverse incision, about one inch long, over the superior margin of the pubic bone in the region of the pubic spine, and down to the bone through the periosteum. With the fingers, separate the contiguous tissues from the posterior surface of the pubic bone. Then pass down a curved artery forceps, push the tip out beneath the bone, and incise the skin over the tip of the forceps. Grasp with the forceps one end of a Gigli saw and draw it through the wound. Saw through the bone. After withdrawing the saw, pack the wounds with gauze to control the hemorrhage. Then extract the child by forceps (*q.v.*) or version (*q.v.*), an assistant at the same time making firm pressure upon the thighs, in order to prevent too great separation of the severed ends of the bone.

Close the upper wound and drain the lower. Apply a broad adhesive strip around the pelvis and upper thighs. Keep the patient in bed fourteen days.

Puerperal Anæmia.—L. *pùer*, boy + *par'ere*, to bear. See Anæmia.

Displacements of the Uterus.—See Displacements of the Puerperal Uterus.

Puerperal Elevation of Temperature.—See Puerperal Fever.

Endometritis.—Gr. ἔνδον within + μήτρα uterus + -ιτις inflammation. See Puerperal Infection.

Fever.—L. *fe'bris.* Since some elevation of temperature during the puerperium appears to be physiological, the upper limit of normal is placed at 100.4° F.

Causes of a Puerperal Elevation of Temperature—Infection; constipation; neuroses (emotion, hysteria, visitors); overdistention of the breasts; caked breasts; sore nipples; uterine displacements; cathartics; colic; retention of urine; exposure to cold; tapeworm; cerebral disease (embolism and hemorrhage in particular); eclampsia; rupture of the uterus; heat-stroke; syphilis; intercurrent disease; disease contracted before pregnancy or the puerperium, *e.g.*, phthisis, malaria, etc.; unknown causes.

Puerperal Hæmatoma.—See Hæmatoma.

Hemorrhage.—See Hemorrhage, Puerperal.

Infection.—L. *infec'tio.* Puerperal infection occurs usually about the third day. It is commonly ushered in by a chill or chilly sensations or by headache or nausea and vomiting, with malaise, furred tongue, elevation of temperature, and rapid pulse. In the less serious cases of putrid infection or sapræmia (caused by saprophytic organisms), the discharge is putrid and abundant; whereas, in the very serious septic cases (caused particularly by streptococci), the discharge is odorless and scanty. Mixed infections occur, however, with intermediate lochial characteristics.

The organisms most commonly concerned in puerperal infection are saprophytes of putrefaction, streptococci, staphylococci, the bacillus coli, gonococcus, and pneumococcus. Other organisms occasionally concerned are the bacillus pyocyaneus, bacillus diphtheriæ, bacillus tetani, bacillus aërogenes capsulatus (gas bacillus), bacillus typhosus, bacillus tuberculosis, etc. (See Puerperal Fever, for other causes of a puerperal elevation of temperature. A sudden cessation of the lochial discharge without fever or constitutional symptoms may be due to the blocking of the internal os by a clot, which may be expelled by means of Credé's manœuvre and ergot).

Prophylaxis embraces thorough cleanliness in the conduct of labor and the subsequent care of the puerperal woman, as few intra-vaginal examinations as possible, the immediate repair of perineal lacerations whenever feasible, and the use of the long gauntlet glove reaching to the elbow for intra-uterine manipulations.

Prognosis.—Most cases of puerperal infection, perhaps about 95 per cent., end in recovery after an illness lasting several weeks or months. The putrid cases are usually quickly cured; but the streptococcic cases are very serious, although about 80 per cent. or more of the latter recover spontaneously.

Treatment.—At the first indication of infection, explore the genital tract, first shaving and cleansing the external genitalia and neighboring skin thoroughly with castile or green soap and hot water, followed by bichloride solution 1 : 2000 to 4000, and cleansing the hands. Remove the stitches of infected lacerations, touch ulcers and gray patches with pure carbolic acid, or tincture of iodine, or silver nitrate, ʒi ad ℥i; then irrigate and cleanse the vagina and mouth of the cervix thoroughly, using gauze sponges and the fingers, with carbolic acid solution, 2 to 3 per cent., or lysol, 0.5 to 1 per cent., or bichloride, 1 : 4000, preceded by tincture of green soap and hot water. Then examine the vagina and cervix again, paying particular attention to the presence of cervical lacerations, and again cauterize ulcers, etc., after first drying the parts. A dusting powder of iodoform may then be applied, if desired.

If the above measures prove insufficient, one may take a culture from the uterus, and at the same time explore the uterine cavity with the gloved finger with the least possible traumatism. The presence of a rough mucosa suggests putrid endometritis; smooth mucosa, streptococcic infection. Remove thoroughly, with special attention to the cornua, any debris present, using for this purpose the finger or large dull wire curette; then give a copious hot normal saline (ʒi ad Oi), or lysol or creolin (0.5 per cent.) irrigation with a double-way tube. If a single-way tube is used, it should be held against the anterior wall of the cervix so as to provide a free return and avoid entrance of the fluid into the tubes.

Examine the appendages, broad ligaments, etc., bimanually. Involvement of the tubes points to surface or gonococcic infection; streptococci invade the tissues.

After the uterus has once been emptied, it is generally conceded that it should be left severely alone. The Carossa treatment, however, seems very rational. A catheter and iodoform gauze are packed into the uterus and allowed to remain for from three days to two weeks. To the catheter are

attached rubber tubing and a funnel, through which is poured every hour, day and night, two or three tablespoonfuls of alcohol diluted with from three parts to one part of hot sterile water. Everyone knows how readily a septic lymphangitis of an extremity is controlled by prolonged soaking in hot bichloride solution.

If a blood or uterine culture reveals the presence of streptococci, antistreptococcic serum may be tried in large doses, 20 c.c., t.i.d., hypodermically, according to Edgar; 80 c.c. every six hours, 320 c.c. during the first twenty-four hours, according to J. S. Evans. Its action, however, is uncertain. The use of bacterins is evidently highly irrational.

Yeast is recommended because it increases leucocytosis. One-fourth of an ordinary compressed yeast-cake may be given three times a day, dissolved in a glass of water. Nuclein, 10 to 60 minims of a 5 per cent. solution, hypodermically, is also recommended for the same reason; as is also Credé's ointment (*q.v.*), 15 to 45 grs., rubbed into the skin for twenty minutes, once to three times daily, and covered with rubber tissue; or daily intravenous injections (*q.v.* in Part 1, General Medicine and Surgery) of argentum colloidale, gr. xv, in a 2 per cent. emulsion. These measures, however, are probably of little value. Formalin intravenously has proven of no value.

Normal saline solution (0.9 per cent.), one litre every six hours, subcutaneously, or ¼ to 1 litre every three to six hours per rectum by the Murphy drop method, is advised.

Absolute rest, fresh air, the Fowler semi-sitting position, hot applications to the lower abdomen, an initial calomel and saline purge, frequent bathing with warm water, or alcohol and water, equal parts, the withdrawal of the child from the breast, plenty of water to drink, and a nutritious soft and liquid diet are essential. The following foods are appropriate, viz., milk, koumyss, broths, eggs beaten up with milk or with broths, beef-juice and pulp, the hearts of raw oysters, panopeptone, beef peptonoids, well-cooked gruels, flavored gelatine and cream. Give as much food as the patient can assimilate.

If a cardiac stimulant is required (pulse above 110), employ strychnine, or caffeine, or camphor. Ergot, or quinine (gr. iii twice daily) or pituitrin may be administered for the purpose of contracting the uterus (see Drugs, Part 11).

Should parametritis (pelvic cellulitis) or pelvic peritonitis develop, and a boggy induration or fluctuation be detected by vaginal palpation, evacuate the accumulation of pus through the lateral or posterior vaginal fornix, open up pus pockets with the finger, and drain with gauze. Freely movable pus tubes and ovarian abscesses should be removed through the abdomen; but if they are adherent to and involve the vaginal vault, they should be opened and drained per vaginam. If the uterus itself is much involved, a total hysterectomy would seem indicated. Abdominal operations should be avoided in streptococcic infections because of the virulence of the organisms.

In draining abscess cavities through the abdomen with gauze-surrounded glass or stiff rubber tubes, suck out the tubes by means of a syringe daily for three or four days; then remove the tube and withdraw the gauze gradually day by day, removing the last portion in eight or ten days.

In cases of uterine and parauterine phlebitis (thrombosis, possibly phlegmasia alba dolens, pyæmia, high irregular fever, very rapid pulse, great depression, red splotches on the body, absence of local signs), maintain absolute rest, administer good whiskey or brandy (*q.v.*) freely, and concentrated liquid food, etc., and consider the advisability of excising the thrombosed vessels or ligating them distalward to the thrombus, as reported by J. W. Williams in five cases with four recoveries. If hemorrhage occurs in metrophlebitis, give ergot (see Part 11) in large doses, and tampon the uterus and vagina for twelve to twenty-four hours, followed by a douche. If this is insufficient, try hot injections of acetic acid, 2 to 6 per cent., and as a last resort, vaporization or the application of steam at a temperature of 100° C. for thirty to forty seconds.

After operations (abdominal or vaginal) for peritonitis, raise the head of the bed, and employ Murphy's continuous rectal instillation of normal salt solution (℥i ad Oi).

The patient should be kept in bed for at least ten days after the temperature has returned to normal, to avoid a relapse.

Puerperal Insanity.—See Insanity of Gestation.

Sepsis.—Gr. σῆψις decay. See Puerperal Infection.

Temperature Elevation.—See Puerperal Fever.

Vaginitis.—L. *vagi'na*, sheath + Gr. -ιτις inflammation. See Puerperal Infection.

Puerperium, Complications of the.—See Complications of the Puerperium.

Puerperium, Diet in the.—See Management of the Puerperium.

Duration of the.—See under Management of the Puerperium.

Management of the.—See Management of the Puerperium.

Pyelitis and Pyelonephrosis Complicating Pregnancy.—Gr. πύελος trough, pelvis + νεφρός kidney + -ιτις inflammation. This frequent complication, due to compression of the ureter at the brim of the pelvis by the pregnant uterus, occurs usually in the latter half of pregnancy. It is manifested by renal pain, tenderness and swelling, fever, sometimes with chills, and pyuria. An enlarged, sensitive ureter may perhaps be palpated per vaginam. Cystoscopy and ureteral catheterization are diagnostic aids (see Pyelonephritis, in Part 1, on General Medicine and Surgery, for extra information).

Treatment.—Put the patient to bed, and have her lie upon the side opposite to that affected. The bladder may be distended with sterile boric acid or normal saline solution, ʒi of either to the pint, for the purpose of exciting peristalsis in the ureters. An ice-bag may be applied to the affected kidney. Prescribe a light, bland diet, consisting largely of milk or buttermilk, and an abundance of water, four to six pints a day. Appropriate foods are well-cooked cereals, oatmeal, barley, rice, farina, sago, tapioca, macaroni, apple sauce, baked apple, orange, grapefruit, prunes, junket, custard, cream, lettuce, celery, watercress, mashed potatoes, green peas, string beans, stale bread, butter, toast, crackers, zwieback. Open the bowels freely. Prescribe urotropin and salol, aa gr. v, every four hours. The induction of premature labor (*q.v.*) is rarely required, but it should be resorted to promptly should serious symptoms arise.

Pyelonephritis of Pregnancy.—See Pyelitis, above.

Pyelonephrosis of Pregnancy.—See Pyelitis, above.

Rachitic Pelvis.—Gr. ῥαχίτις from ῥάχις spine + -ιτις inflammation. See Contracted Pelves.

Relaxation of the Pelvic Joints.—L. *relaxa're* to loosen; *pel'vis*, basin. The patient complains of pain and difficult or impossible locomotion, and the diagnosis is made by holding the forefinger in the vagina against the posterior surface of the symphysis pubis and the thumb against the front of the symphysis, while the patient takes a few steps, or while the patient lies upon her back and an assistant moves her thighs.

Treatment.—Apply a firm bandage or canvas or leather belt or adhesive plaster, about three inches wide, about the hips, between the iliac crests and the trochanters, or just below the trochanters. If necessary, the patient should be kept in bed, and the pelvis supported by means of sandbags. Union usually occurs in about two weeks; but the condition sometimes becomes chronic. A belt should be worn for some time after child-birth. Wiring of the pubic joint is rarely called for.

Removal of the Placenta.—See Adherent Placenta.

Respiration, Artificial.—L. *respira'tio* a breathing; *ars*,art + *fac'ere* to make. See Asphyxia Neonatorum.

Retention of Urine.—See Management of the Puerperium.

Retrodisplacements of the Parturient Uterus.—L. *re'tro* backward. See Displacements of the Parturient Uterus.

Pregnant Uterus.—See Displacements of the Pregnant Uterus.

Puerperal Uterus.—See Displacements of the Puerperal Uterus.

Rheumatism of the Myometrium.—See Myometrial Rheumatism.

Rickets, Congenital or Fœtal.—See Achondroplasia, in Part 1.

Rigidity of the Cervix Causing Dystocia.—L. *rigid'itas* stiffness. See Atresia of the Cervix.

Robert Pelvis.—See under Contracted Pelves.

Rupture of the Pelvic Joints, the Symphysis Pubis, or Sacro-Iliac Joints.—L. *ruptu'ra*, from *rump'ere* to break; *pelv'is*, basin. The bones may be felt to give way at the time of labor, or the patient later may complain of local pain and inability to sit up or walk.

Treatment.—Apply around the hips, between the iliac crests and the trochanters, a broad, firm canvas or leather belt, or adhesive plaster, or plaster-of-Paris bandage, about three inches wide; support the pelvis with sandbags, and keep the patient in bed for six to twelve weeks. Silver wire sutures may possibly be required.

Open and drain if suppuration occurs.

The Prognosis is good.

Rupture of the Uterus.—Rupture of the uterus occurs usually during labor, but it may occur earlier. It is manifested, as a rule, by a sudden sharp pain occurring during the course of a prolonged obstructed labor with frequent vigorous pains and Bandl's contraction ring high up near the umbilicus; but it may occur without such

warning circumstances. The time and manner of its occurrence depend, of course, upon the degree of weakness of the uterine wall. Following the sudden pain, the uterine contractions cease, the presenting part recedes, hemorrhage occurs, and shock ensues. If the rent involves the lower uterine segment, which it usually does, it may be felt by internal examination. It is termed complete if the peritoneum is opened, otherwise incomplete.

Rupture may occur without any very noticeable symptoms until later in the puerperium, when symptoms and signs of infection make their appearance, and possibly prolapse of the intestines.

The frequency of rupture is about one in 500 to 1000.

Etiology.—Obstructed labor, due to a contracted pelvis, large child, malposition or malpresentation of the fœtus, hydrocephalus, stenosis of the birth canal, pelvic tumors, etc.; lateral displacement of the uterus, resulting in undue stretching of one side of the lower uterine segment; weakening of the uterine wall, due to previous rupture, Cæsarean section, myomectomy, curettage, manual removal of an adherent placenta, a blow or a fall during pregnancy, fatty degeneration, syphilis, soft myoma, carcinoma, placenta prævia, extensive syncitial invasion of the uterine wall; extensive cervical laceration due to too rapid manual or instrumental dilatation of the cervix; use of ergot before delivery; performance of version; Credé's method of expressing the placenta; manual removal of the placenta; curettage; pregnancy in a bicornuate or infantile uterus.

Treatment.—As soon as rupture is suspected, extract the child as rapidly as possible, by internal podalic version (*q.v.*) forceps (*q.v.*), or craniotomy (*q.v.*); and extract the placenta. If the tear is incomplete, or if complete, small and low down on the posterior wall, and little or no foreign matter has entered the peritoneal cavity, pack the rent with iodoform gauze to control hemorrhage and provide drainage, and apply external abdominal pressure. If the child or placenta has passed into the peritoneal cavity, however, or if, after extracting the child and placenta, the tear is found to be extensive, and much blood or liquor amnii has entered the peritoneal cavity, or if the tear is on the anterior wall or at the fundus, or if the child is unborn and the cervix not dilated, perform laparotomy and supravaginal or total hysterectomy or suture of the rent with deep sutures involving the serous and muscular coats, and superficial sutures. Cleanse the peritoneum of all clots, etc., best with gauze pads, or if need be, by irrigation with hot normal saline solution, 0.9 per cent.

Reynolds and Newell advise the free use of saline cathartics (*q.v.*) as a preventive of peritonitis in the conservative treatment of rupture.

R. McPherson reports the immediate marvelous revival and subsequent recovery of a moribund patient by means of blood transfusion (consult Part 1, on General Medicine and Surgery).

Prophylaxis.—Consult the treatment of Contracted Pelves. Pregnancy occurring in a previously ruptured or incised uterus should be treated by Cæsarean section (*q.v.*) before the onset of labor (at the thirty-sixth week).

Sacro-Iliac Joints, Rupture of the.—L. *sac'rum*, sacred; *il'ium*, haunch-bone. See Rupture of the Pelvic Joints.

Presentations.—See Breech-Presentations.

Salivation Complicating Pregnancy.—L. *sali'va*, spittle; *saliva'tio*. Salivation may be due to reflex irritation, when it is, of course, intractable; or autointoxication, when it is greatly benefited by a rigorous milk diet (J. W. Williams); or to hyperchlorhydria (see Dyspepsia); or to gingivitis (*q.v.*); or to dental caries (*q.v.*); etc., (see Part 1 on General Medicine and Surgery). It usually disappears in the later months of pregnancy.

A mouth-wash or troches of tannic acid (*q.v.* in Part 11), and the bromides (*q.v.*) may be of service.

℞ Tincturæ krameriæ..... ℥ss
Aluminis..... ℥i
Aquæ, q.s. ad..... ℥viii
M. Sig.—Mouth-wash.

Sapræmia.—Gr. *σαπρός* rotton + *αἷμα* blood. See Puerperal Infection.

Sarcoma.—Gr. *σάρξ*, *σαρκός* flesh + *-ωμα* tumor. See under Atresia.

Scanty Urine.—See Toxæmias of Pregnancy.

Schultze's Method of Artificial Respiration.—See Asphyxia Neonatorum, in Part 1.

Sclerema Neonatorum.—See Part 5, Skin Diseases.

Separation, Premature, of the Normally Situated Placenta.—See Premature Separation, etc.

Sepsis, Puerperal.—Gr. *σῆψις* decay. See Puerperal Infection.

Shock and Collapse.—Shock or collapse is manifested by a rapid, weak pulse, low blood-pressure, increased frequency of respiration,

subnormal temperature, muscular relaxation, pallor, cold clammy respiration, diminished urinary secretion, and weakening or loss of consciousness.

Etiology.—Strain of labor; debility; anæmia; severe hemorrhage; excessive vomiting; toxæmia; emotion; pain; adynamic diseases; forcible attempts to expel the placenta; compression of an ovary in performing Credé's manœuvre; rupture of the uterus.

Treatment.—Lower the head, elevate the foot of the bed, surround the body with hot water bottles wrapped in towels, placed near but not in contact with the skin, and observe absolute quiet. Administer hot normal saline solution (0.6 to 0.7 per cent., or, say, gr. xlvi to the pint, temperature 102° F.) per rectum or subcutaneously or intravenously. Give, according to Crile, no more than a pint at a time (to avoid pulmonary œdema), and repeat every hour until the pulse is restored. Adrenalin chloride, 15 minims of a 1 : 1000 solution, may be added to the pint of saline solution. Give the infusion very slowly. Gum salt solution (see Part 11) is preferable. Brandy digitalin, strychnine, camphor, atropine, caffeine, pituitrin, and morphine, gr. ⅛ to ¼, may be of some service (see Drugs, Part 11).

In order to confine the blood to the vital centres, one may bandage the extremities and abdomen evenly and tightly over thick layers of non-absorbent cotton, for one or two hours, but with care not to impede the movements of the diaphragm.

Shoulder Presentations.—See Transverse Presentations.

Signs of Pregnancy.—See Diagnosis of Pregnancy.

Skene's Glands, Abscess of.—L. *glans,* a cord. See Vulvitis.

Skin Diseases Complicating Pregnancy.—See Chloasma; Dermatitis Herpetiformis, or Herpes Gestationis; Impetigo Herpetiformis; Pruritus.

Sore Nipples.—See Nipples, Sore.

Sour Eructations.—L. *eructa'tio,* belching. See Dyspepsia.

Spasm of the Cervix Causing Dystocia.—Gr. *σπασμός.* See Atresia of the Cervix.

Spondylolisthesis.—Gr. *σπόνδυλος* vertebra + *ὀλισθάνειν* to slip. See under Contracted Pelves.

Stage of Labor.—See Conduct of Normal Labor.

Stage of Pregnancy.—The fundus uteri is situated, at the fourth lunar month, just above the pelvic brim; fifth lunar month, midway between the symphysis pubis and the umbilicus; sixth lunar month, at the level of the umbilicus; seventh lunar month, three or four fingers' breadth above the umbilicus; eighth lunar month, three fingers above that of the seventh month, or about midway between the umbilicus and the xiphoid cartilage; ninth lunar month, at the xiphoid; tenth lunar month, at the same level as at the eighth month, owing to the engagement of the presenting part.

Engagement of the presenting part, which is manifested by a sinking of the womb, or "lightening," occurs, in primiparæ, about four weeks before, and in multiparæ, about two weeks or less before the onset of labor.

The date of confinement is estimated approximately by adding seven days to the first day of the last menstrual period and then counting back three months (Nægle); thus, if the last menstruation began on July 6th, add seven days, making July 13th, then count back three months, which makes April 13th, the approximate date of confinement.

Stenosis.—See Atresia.

Sternocleidomastoid Hæmatoma.—See Hæmatoma of the Sternocleidomastoid, in Part 1.

Stone in the Bladder.—See Bladder Calculus.

Stridor.—L. harsh whistling sound.—See Part 1.

Subinvolution of the Uterus.—L. *sub,* under + *involu'tio,* from in, into + *volv'ere,* to roll. Imperfect involution of the uterus following the termination of pregnancy is manifested by local pain or discomfort or the sensation of heaviness, backache, a persistent profuse red lochial discharge, and a large tender and soft uterus. The normal lochia for the first three to five days after labor is red (lochia rubra); from then until about the tenth day it is grayish (lochia serosa); and after that, white (lochia alba). The persistence of a reddish color beyond several weeks indicates subinvolution or the retention of secundines. The fundus uteri under normal conditions should be at the level of, or a little below the symphysis pubis on the tenth to twelfth day after childbirth.

Etiology.—Getting up too soon; cervical laceration; infection; retention of secundines; "imperfect exfoliation of the decidua"; uterine displacement; chronic constipation; habitual distention of the bladder; peri-uterine adhesions; uterine fibroids; pelvic congestion due to abdominal tumors, cardiac, renal, hepatic or pulmonary disease; great shock; puerperal insanity; sexual intercourse too soon.

Treatment.—Correct any possible causal influence (*q.v.*, under its appropriate title). If no other cause than a chronic metritis is evident, treat the condition as described under Metritis, in Part 2, on Gynæcology.

Submammary Abscess.—L. *sub*, under + *mam'ma*, breast; *absces'sus*, a going apart. See Mastitis.

Suburethral Abscess.—L. *sub*, under + Gr. *οὐρήθρα* urethra. See Vulvitis.

Superinvolution of the Uterus.—L. *su'per*, above + *involu'tio*, from *in*, into + *vol'vere*, to roll. A rare condition, diagnosed by the association of amenorrhœa with a small-sized uterus. Ascribed causes are anæmia from uterine hemorrhage, overlactation, wasting diseases, reflex irritation incident to nursing; nervous derangements, *e.g.*, puerperal insanity, chorea, etc.; local inflammation, especially ovarian; and a rapid succession of labors.

Treatment.—See under Amenorrhœa, in Part 2, on Gynæcology.

Sweating.—Night sweating during the puerperium is physiological.

Symphyseotomy.—Gr. *σύν* together + *φύειν* to grow + *τέμνειν* to cut. See, instead, Pubiotomy.

Symphysis Pubis, Rupture of the.—Gr. *σύν* together *φύειν* to grow; L. *pu'bes*, pubic bone. See Rupture of the Pelvic Joints.

Symptoms of Pregnancy.—See Diagnosis of Pregnancy.

Syncope.—Gr. *συγκοπή* fainting. See Shock.

Syncytioma Malignum.—See Chorio-Epithelioma.

Syphilis Complicating Pregnancy.—If either parent is syphilitic, treat the mother by means of salvarsan, mercury, and iodide, as described under Syphilis, in Part 1, General Medicine and Surgery.

Tears, Cervical.—L. *cer'vix*, neck. See under Management of the Puerperium.

Perineal.—Gr. *περίνειον*. See under Conduct of Normal Labor.

Teeth, Caries of the.—See Dental Caries.

Temperature Elevation, Puerperal.—See Puerperal Fever.

Thrombosis, Crural.—Gr. *θρόμβωσις*; L. *crus, cru'ris*, leg. See Phlegmasia Alba Dolens.

Uterine and Parauterine.—Gr. *παρά* near; L. *u'terus*, womb. See under Puerperal Infection.

Toxæmias of Pregnancy.—Gr. *τοξικόν* poison + *αἷμα* blood; L. *præg'nans*, with child. The so-called hepatic or pre-eclamptic toxæmia of pregnancy, presumably occasioned by hepatic insufficiency, or the inability of the liver adequately to dispose of the toxines arising in pregnancy, usually occurs late in pregnancy, with the following symptoms, viz., lassitude, headache, perhaps jaundice and a tendency to hemorrhage, perhaps vomiting, rapid feeble pulse, blood-pressure normal or high (125 to 150 or over; 115 mm. of mercury during pregnancy is considered normal); perhaps loss of weight, sometimes mental disturbance, perhaps some œdema and a diminished, albuminous urine, and failure of vision, and later perhaps epigastric pain, somnolence, coma, and eclampsia.

About 2 to 3 per cent. of pregnant women develop symptoms of hepatic toxæmia. In early pregnancy it may be manifested by excessive vomiting.

The so-called nephritic toxæmia of pregnancy (kidney of pregnancy; uræmia), presumably occasioned by renal insufficiency, or the temporary breakdown of a mildly diseased or weak kidney as a result of the strain of pregnancy, is manifested by symptoms similar to those of hepatic toxæmia, but especially œdema, a scanty urine containing much albumen and casts of all kinds, with a markedly diminished nitrogen excretion, and high blood-pressure. Fœtal death and premature labor often ensue. Nephritic toxæmia is said to be much less frequent than the hepatic type.

J. W. Williams says: "It would appear that one attack (of hepatic toxæmia) confers a relative immunity upon the patient, just as in eclampsia; accordingly, when toxæmia occurs in repeated pregnancies, it may be inferred that it is of the nephritic type and is dependent upon the existence of a chronic nephritis." See Metabolism, in Part 1, for points of differentiation between hepatic and renal insufficiency.

The Prognosis of pregnancy toxæmia is good in mild cases; very bad in sudden, fulminating cases.

(It should be borne in mind that acute nephritis may occur during pregnancy as a result of exposure to cold or wet or draughts, or of overeating, highly seasoned food, chemical poisons, infectious diseases, etc.)

Treatment.—If albumen appears in the pregnant woman's urine (see Urinalysis) prescribe laxatives (see Part 11) frequent warm baths, warm, dry clothing, and woolen or flannel underwear, and light diet consisting chiefly of milk and plenty of water, best in the form of cream of tartar lemonade (*q.v.*). Bread and butter, well-cooked cereals, lettuce, celery, apple sauce,

oranges, and prunes are allowable; but meat, eggs, fish, and very nitrogenous vegetables are forbidden.

Should oliguria, œdema, and urinary casts appear, or the excretion of urea fall below ten grams per diem, or the albumen rise over five grams per litre (see Urinalysis), put the patient to bed, clean out the gastro-intestinal tract, restrict the diet chiefly to milk or milk soups (at least two quarts of milk in twenty-four hours), employ warm, hot, or sweat baths (see under Uræmia in Part 1), according to the severity of the case, every other day, administer normal saline solution (0.6 per cent.) per colon or subcutaneously, and prescribe a diuretic if deemed advisable, *e.g.*, potassium citrate or acetate, buchu, Basham's mixture, caffeine, nitroglycerin (see Part 11).

If in spite of these measures the symptoms grow worse, if obscurity of vision occurs, if the albumin steadily or suddenly increases (according to J. W. Williams, " an output of eight to ten grams of albumin per litre, irrespective of other symptoms, justifies interference), the blood-pressure rises, the quantity of urine suddenly diminishes, the œdema becomes excessive, the headache intense, if somnolence or eclampsia (*q.v.*), occurs, the uterus should be emptied at once (see Eclampsia).

Transfusion of Blood.—See Blood Transfusion, in Part 1, General Medicine and Surgery.

Transversely Contracted Pelvis.—L. *trans* across + *ver'tere*, to turn. See Contracted Pelves.

Transverse Position of the Head at the Pelvic Outlet.—Frequency.—0.9 per cent. (Edgar.)

Etiology.—Simple flat pelvis; generally contracted flat pelvis; masculine or funnel-shaped pelvis; very small head descending precipitately; congenital double dislocation of the hip; large head with broad occiput; incomplete flexion of the head. (Edgar.)

Treatment.—Digital rotation may be tried, and if this fails, rotation and traction with forceps (*q.v.*); or pubiotomy (*q.v.*), if the child is alive; craniotomy (*q.v.*), of course, if it is dead.

Transverse Presentations; Shoulder Presentations.—Etiology.—Pendulous, relaxed abdomen and uterus of multiparous women; contracted pelvis; uterine fibroids; abdominal and pelvic tumors; multiple pregnancy; hydramnios; large child; monstrosity; placenta prævia; jars or other form of traumatism; tight lacing during pregnancy; fœtal death; premature birth; uterus bicornis; broad uterus accompanying a kyphotic spine; " excessive right lateral obliquity of the uterus."

Treatment.—I. During Pregnancy.—If the pelvis is markedly contracted, perform Cæsarean section (*q.v.*) at term. If the pelvis is normal, perform external cephalic version, and hold the fœtus in place by means of an abdominal binder applied over two long cylindrical compresses of gauze placed at the sides of the uterus.

II. During Labor.—A markedly contracted pelvis may demand Cæsarean section (*q.v.*), unless infection is probably present. If considered feasible, and provided, of course, the membranes have not ruptured, one may perform external cephalic version, and hold the fœtus in place manually until engagement occurs. Internal podalic version (*q.v.*), however, is usually the only practicable procedure. If the cervix is slow in dilating, one may perform Hick's bipolar version (*q.v.*), then bring down a foot, and exert gentle traction; but the child should not be extracted until complete cervical dilatation has occurred.

If internal podalic version is contraindicated (see Podalic Version), or the shoulder is tightly impacted, perform decapitation (*q.v.*).

For the treatment of prolapse of the cord, see the latter caption.

Tuberculosis Complicating Pregnancy.—L. *tuber'culum*, nodule. Artificial abortion (*q.v.*) is advised, unless pregnancy is far advanced. After the fifth month it is probably advisable to adopt expectant treatment and to induce labor two weeks before term. Forceps or version may be advisable during labor.

Tumor, Ovarian, Complicating Pregnancy and Labor.—See Ovarian Tumors, etc.

Tumors, Fibroid, Causing Dystocia.—See Fibroid Tumors Causing Dystocia.

Complicating Pregnancy.—See Fibroid Tumors Complicating Pregnancy.

Ovarian, Complicating Pregnancy and Labor.—See Ovarian Tumors.

of the Pelvis.—See Contracted Pelves.

Vagina or Vulva Causing Dystocia.—See Atresia of the Vagina and Vulva.

Twin Pregnancy.—See Multiple Pregnancy.

Tympanites.—See Part 1.

Typhoid Fever Complicating Labor.—Gr. τῦφος stupor + εἶδος form; L. *fe'bris*, fever. See Adynamic Diseases.

Umbilical Hernia.—L. *umbili'cus; her'nia.* See under Displacements of the Pregnant Uterus.

Uræmia.—Gr. οὖρον urine + αἷμα blood. See Toxæmias of Pregnancy.

Urinalysis.—See Part 1, General Medicine and Surgery.

Urinary Fistula.—See Fistula, Genito-Urinary.

Retention.—L. *uri'na; reten'tio.* See Management of the Puerperium.

Urination.—See Micturition.

Uterus, Anteflexion of the Pregnant.—L. *u'terus*, womb; *an'te* + *fle'xio*, bend. See Displacements of the Pregnant Uterus.

Atony of the.—Gr. *a* priv. + τόνος tone. See Inertia Uteri.

Displacements of the.—See Displacements.

Fibroids of the.—See Fibroid Tumors.

Inertia of the.—See Inertia Uteri.

Inversion of the.—See Inversion of the Uterus.

Myalgia of the.—See Myometrial Rheumatism.

Phlebitis of the.—Gr. φλεψ vein + -ιτις inflammation. See Puerperal Infection.

Prolapse of the.—L. *pro*, before + *la'bi*, to fall. See Prolapse.

Retrodisplacements of the.—L. *re'tro*, backward. See Displacements.

Rheumatism of the.—See Myometrial Rheumatism.

Rupture of the.—See Rupture of the Uterus.

Subinvolution of the.—See Subinvolution.

Superinvolution of the.—See Superinvolution.

Vaginal Atresia.—L. *vagi'na*, a sheath. See Atresia of the Vagina.

Cæsarean Section.—See under Premature Labor, Induction of.

Carcinoma.—Gr. καρκίνος crab + -ωμα tumor. See Atresia of the Vagina.

Cysts.—Gr. κύστις cyst. See Vaginitis.

Hæmatoma.—See Hæmatoma.

Hernia of the Pregnant Uterus.—L. *her'nia.* See under Displacements of the Pregnant Uterus.

Hysterotomy.—Gr. ὑστέρα uterus + τομή cut. See under Premature Labor, Induction of.

Laceration.—L. *lacera're*, to tear. See under Conduct of Normal Labor.

Leucorrhœa Complicating Pregnancy.—Gr. λευκός white + ῥοία flow. See Vaginitis in Pregnancy.

Sarcoma.—Gr. σάρξ, σαρκός flesh + -ωμα tumor. See Atresia of the Vagina.

Stenosis.—Gr. στένωσις. See Atresia of the Vagina.

Vaginal Tumors.—L. *tum'or*, swelling. See Atresia of the Vagina.

Vaginismus.—See Atresia of the Vagina.

Vaginitis in Pregnancy.—L. *vagi'na*, a sheath + Gr. -ιτις inflammation; L. *præg'nans*, with child. **A. Granular Vaginitis.**—Vaginal leucorrhœa in pregnancy is usually due to or aggravated by the congestion of pregnancy. "The best treatment of vaginal leucorrhœa," says Hirst, "is a single application to all parts of the vagina of a 30 per cent. solution of carbolic acid in glycerine," made through a cylindrical or skeleton wire bivalve speculum, preceded by greasing of the vulva with vaseline, and followed by an alcohol and water douche. Silver nitrate, gr. xx to the ounce, followed by a saline douche (℥i ad Oi) is also effectual. Edgar recommends one of the following suppositories, which is inserted at bedtime, and in the morning a douche of warm boric acid solution, one teaspoonful to the pint, or alum solution, one teaspoonful to the quart, given:

℞ Hydrastininæ hydrochloridi..... gr. i
Zinci boratis..... gr. ¼
Extracti belladonnæ..... gr. ¼
Boroglycerini et olei theobromatis, q.s. (Edgar.)

℞ Extracti belladonnæ..... gr. ⅓
Acidi tannici..... gr. v–x
Boroglycerini et olei theobromatis, q.s. (Edgar.)

B. Gonorrhœal Vaginitis.—Consult Part 2, Gynæcology. Intracervical treatment, however, should be employed, if at all, with care because of the danger of provoking abortion.

C. Cystic Vaginitis; Colpohyperplasia Cystica.—The mucous membrane is hypertrophied, and contains small cysts. The latter rarely contain gas (emphysematous colpitis, due possibly to the gas-forming bacillus).

Prick the vesicles and douche with boric acid solution, ℥i–iv ad Oi. "The disease disappears of itself after delivery."

D. Venereal Warts.—Skin-colored, pink, or purplish-red, finger-like vegetations, resembling cauliflower, cockscomb, bunch of grapes, or mulberries.

Treatment.—See Part 2, Gynæcology.

Vaginitis, Puerperal.—See Puerperal Infection.

Valvular Heart Disease Complicating Pregnancy and Labor.—L. *val'va.* See Cardiac Disease.

Varicose Veins of the Bladder.—L. *varix; vena.* See Hæmaturia.

Varicose Veins of the Legs.—Employ elastic bandages or stockings. The latter must be made to measure, the measurements being taken in the morning, before

the patient gets upon her feet. Frequent recumbency and the avoidance of constipation (*q.v.*) should be enjoined. A heart tonic in small doses may sometimes be serviceable in appropriate cases. For itching, employ the following:

℞ Calaminæ,
Zinci oxidi, aa ..... ʒii–iv
Acidi borici ..... ʒii
Glycerini ..... ♏xxx
Acidi carbolici ..... ʒss–i
Liquoris calcis ..... ʒii
Aquæ bullientis, q.s., ad ..... ʒviii

M. Sig.—Shake well, and apply as required for itching.

Should thrombosis occur, treat the condition as described under Phlegmasia Alba Dolens.

Varicose Veins of the Vulva.—Regulate the bowels (see Constipation), support the uterus with an abdominal binder, and the vulva with a compress and T-bandage, prescribe hot or cold lead and opium wash (*q.v.*) for the relief of itching, and enjoin frequent recumbency. Unguentum gallæ (*q.v.*) may be of service. Rupture should be guarded against, because of the danger of serious hemorrhage. The condition usually disappears after parturition.

Accidental hemorrhage should be controlled by means of firm gauze compresses or deep catgut sutures.

Venereal Warts.—L. *vene'reus*, pertaining to Venus. See under Vaginitis in Pregnancy.

Venous Thrombosis, Crural.—L. *ve'na*, vein; *crus, cru'ris*, leg; Gr. *θρόμβος* plug. See Phlegmasia Alba Dolens.

Uterine.—See under Puerperal Infection.

Ventral Hernia of the Pregnant Uterus.—L. *vent'er*, belly; *her'nia*, hernia. See under Displacements of the Pregnant Uterus.

Version, Bipolar, of Braxton Hicks.—L. *ver'sio*, turning; *bi*, two + *pol'us*, pole. See Cephalic Version; and Podalic Version.

Cephalic.—See Cephalic Version.

Combined External and Internal.—See Cephalic Version; and Podalic Version.

External.—See Cephalic Version.

Internal Podalic.—See Podalic Version.

Podalic.—See Podalic Version.

Vesical Calculus.—L. *vesi'ca*, bladder. See Bladder Calculus.

Vision, Disturbance of.—L. *vis'io, vid'ere*, to see. See under Paralyses Complicating Pregnancy.

Vomiting of Pregnancy.—See Nausea and Vomiting of Pregnancy.

Vulval Abscess.—L. *vul'va; absces'sus*, a going apart. Consult Vulvitis, in Part 2, on Gynæcology. Operations are best performed during the last month of pregnancy.

Vulval Atresia Causing Dystocia.—See Atresia of the Vagina and Vulva.

Carcinoma.—Gr. *καρκίνος* crab + *-ωμα* tumor. See Atresia of the Vagina and Vulva.

Hæmatoma.—See Hæmatoma.

Œdema.—See Œdema of the Vulva.

Pruritis.—See Pruritis Vulvæ.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Atresia of the Vagina and Vulva.

Varices.—See Varicose Veins of the Vulva.

Walcher's Hanging Posture.—See under Contracted Pelves.

Warts, Veneral, Complicating Pregnancy.—L. *vene'reus*, pertaining to Venus. See under Vaginitis.

White Leg.—See Phlegmasia Alba Dolens.

Yellow Atrophy of the Liver, Acute.—See Acute Yellow Atrophy of the Liver in Part 1.

APPENDIX

Obstetrical Record

Name *Address* *No.*
Single *Married* (how long) *Widow* (how long) *Occupation*
No. and ages of children *Age* *Race*
Previous pregnancies *General appearance*
Miscarriages *Hygiene:* Rest Exercise
Recreation Diet Sleep
Previous labors Bowels Ventilation Baths
Sexual habits Tea and coffee Narcotics
Previous puerperia Alcohol Digestion Appetite
Menstruation: Intervals duration amount pain
Personal history (age when first walked)
Examination: *Expected date of confinement*
Breasts Fundus Fœtal heart
Presentation and position of fœtus Abdomen (pendulous)
Lungs, heart, bowels, etc. Varicose veins
Urinary Analysis (*q.v.*): Amount in 24 hours Frequency
Color reaction s.g. total solids
Urea albumin sugar sediment
Renal function
Pelvic measurements:
Intercristal
Interspinous
Intertrochanteric
External conjugate
Diagonal conjugate
True conjugate
Interischial diameter
Flexibility of the coccyx
Abnormalities
Present pregnancy: (Headache, œdema, vomiting, visual disturbance, constipation, hemorrhage).

Labor

Date
Duration: 1st stage 2d stage 3d stage
Spontaneous
Credé
Presentation and position of child
Hemorrhage
Perineum

Puerperium

Mother: *Child:*

Day	Temp. a.m.	Temp. p.m.	Pulse a.m.	Pulse p.m.	Stools	Bladder	Lochia	Breasts	Umbilicus	Eyes	Bladder and Stools	Digestion	Weight
Labor													
1st													
2d													
3d													
4th													
5th													
6th													
7th													
8th													
9th													
10th													
11th													
12th													
13th													
14th													

Examination on the Sixth Week of the Puerperium:
Perineum Vaginal secretion
Uterus (size, position, mobility, sensitiveness, cervix)
Child:

The Obstetrical Outfit.—A special leather-covered box or valise is of convenience in out-patient work. J. W. Williams recommends a rectangular box measuring 21 by 8½ by 8 inches, containing a tin box measuring 40 by 30 by 10 cm., with a tin lid and wooden handles, to boil the instruments in.

The obstetrical valise should contain the following:

(a) In the valise proper: Pelvimeter; nail-clippers; nail-cleaner; chloroform and inhaler; ether; bichloride tablets or lysol; castile or green soap; sterile vaseline in a tin salve-box, in which it may be sterilized on the stove at the patient's residence (for anointing the fingers in making internal examinations); ergotol, ergotin, or fl. ext. ergot; spring baby-scale; tablets of sodium chloride for preparing normal salt solution; hypodermic syringe and tablets; quinine in 5-gr. capsules; chloral hydrate in 15-gr. amounts; pituitrin; sterile gown; two packages, each containing six sterile towels; one small package of sterilized absorbent cotton; a dozen or more small packages containing sterile gauze sponges; one package of sterile vulvar pads (absorbent cotton covered with gauze); three sterilized gauze bandages for packing the uterus; sterile catgut in a glass tube; leg-holder; Kelly obstetrical pad; three-quart fountain syringe with a glass nozzle for intra-uterine and a hollow needle for subcutaneous injections of normal salt solution; safety razor; clinical thermometer; a sterilized powder shaker containing boric acid powder or salicylic acid, 1 part, and starch, 8 parts; boric acid solution, gr. xv to the ounce, for the baby's eyes; silver nitrate, 1 or 2 per cent., for the baby's eyes; bulbous tipped eye-dropper; stethoscope.

(b) In the tin box: Hand brush; soft rubber and glass catheters; silkworm-gut; bobbin or narrow tape for tying the cord; glass intra-uterine nozzle; transfusion needle; rubber gloves; and the following instruments: surgical scissors; umbilical scissors; needle-holder; assortment of needles, chiefly large curved; four artery clamps; two tissue clamps for clamping the cord; dissecting forceps; long dressing forceps; tenaculum forceps; three-bladed speculum; Simon speculum; Tarnier axis-traction or Simpson axis-traction forceps; safety pins.

Instruments and Material for Operative and Miscellaneous Procedures.—Simpson's cranioclast; Thomas's perforator; Nägele's perforator; pubiotomy instruments: convex bistoury and Gigli's wire saw with handles; ovum or placenta forceps; large dull wire curette; Braun's cranioclast; Dubois's scissors; Smellie's perforator; set of Barnes's cervical dilators; colpeurynter; Arthur Miller's modification of Champetier de Ribes's metreurynter; Arthur Miller's cervical dilator; linen tape, ¼ inch wide, for fillets; Olivier's fillet-carrier; repositor for the prolapsed cord; double-current uterine irrigator; Champetier de Ribes's balloon; Voorhees's rubber bags; heavy and light steel cervical dilators; sharp uterine curettes; metranoicter; Braun's colpeurynter; uterine sound; probe-pointed bistoury; pulmotor; adhesive plaster, three inches broad; uterine bougies, No. 17 French, or 10 or 12 English; prostatic catheter; Sims's speculum; watch-spring pessary; Smith-Hodge pessary, large size; globe, air, or water pessary; Bossi's four-branch dilator; Pomeroy's bag; wet cups; cylindrical speculum; stomach tube; Goodell's dilators; Hegar's dilators; thermocautery; Smellie's scissors; Blot's perforator; uterine clamps; Tarnier's basiotribe; Simpson's basilyst-tractor; rubber tubing and funnel; a flexible catheter containing a flexible stylet as a fillet carrier; Momburg's rubber tubing; scalpels; plaster-of-Paris; chromic catgut No. 2; linen thread; wire écraseur for decapitation of the fœtus; skeleton wire bivalve speculum; Braun's blunt hook; Ramsbotham's sickle knife; curved artery forceps; Emmet's curettement forceps; Hank's cervical metal dilators, coniform and olive-shaped (in using the coniform and olive-shaped dilators an assistant should exert counter-pressure on the fundus uteri); Garrigues's olive-shaped cervical dilators, ten in number; Gœlet's expanding dilator; weighted vaginal speculum; forceps for carrying rubber bags into the uterus; Braun's fillet-carrier; Seeligmann's pubiotomy needle; long gauntlet glove reaching to the elbow, for performing version ; Teufel's abdominal supporter; Patterson's abdominal supporter; breast pump; nipple shield; hot-water bags; five basins; large pitcher, douche-pan; two or three quart fountain syringe ; Davidson's bulb syringe ; sterile gauze and absorbent cotton; cotton batting; rubber sheeting or oil cloth, two pieces, one 1 by 2 yards and one 1 by 1½ yards; sanitary bed-pads made of cotton batting and absorbent cotton; waste bucket; small and large safety pins; blood-pressure instrument; unbleached folded muslin binder, about 1¼ yards long and reaching from below the trochanters to the lower ribs; long stockings, canton-flannel for winter, thin muslin for summer; breast-binder.

Instruments are boiled in a solution of washing soda (sodium carbonate), one even tablespoonful to the quart, for five minutes.

Urinary Analysis Outfit.—See the Appendix to Part 1.

Internal Drugs Mentioned in the Text.—(a) **Purgatives** (L. *purgar'e*, to cleanse).—Compound laxative pill, containing aloin, strychnine, ipecac, and belladonna; aromatic fluid extract cascara sagrada; compound licorice powder; aloin; sulphur, effervescent citrate of magnesia; Rochelle salt; castor-oil; effervescent sodium phosphate; calomel; croton oil; elaterium tablets, gr. ¼; Epsom salt.

(b) **Emmenagogues** (Gr. *ἔμμηνα* menses + *ἄγειν* to lead).—Ovarian extract; apiol; manganese dioxide; potassium permanganate; iron; tr. pulsatilla; salicylic acid; ext. vib. prun.; fl. ext. vib. prun.

(c) **Oxytocics or Ecbolics** (Gr. *ὀξύς* quick + *τόκος* childbirth; *ἐκβολή* abortion).—Pituitrin, quinine; ergot; enemata.

(d) **Gastric Sedatives** (L. *sédo*, I allay).—Cerium oxalate; carbolic acid; bismuth; silver nitrate; cocaine; menthol; pepsin; vinum ipecac; dilute hydrocyanic acid.

(e) **Antacids.**—Magnesium carbonate in chalk form; sodium bicarbonate; milk of magnesia; ammonium carbonate; precipitated chalk; potassium bicarbonate; lime-water; ammonia.

(f) **Digestants.**—Essence of pepsin; pancreatin; comp. tr. gentian; tr. nux vomica; dilute hydrochloric acid; pepsin.

(g) **Antirheumatics.**—Sodium salicylate; aspirin.

(h) **Cardiovascular Drugs.**—Amyl nitrite; champagne; nitroglycerine; spt. glonoini; digitalis; strychnine; ammonia; ammonium carbonate; pituitrin; whiskey.

(i) **Alteratives and Tonics.**—Calcium chloride; Blaud's pills; syr. calc. lactophosphate; iron albuminate; strychnine; codliver oil; syr. hypophosphites; Fowler's solution; potassium iodide; oil of sandalwood; sodium benzoate; oxygen.

(j) **Diuretics** (Gr. *διά* through + *οὖρον* urine).—Basham's mixture; cream of tartar; potassium chloride; caffeine.

(k) **Hæmostatics** (Gr. *αἷμα* blood + *στάσις* a standing).—Pituitrin; ergotol; ergotin; fl. ext. ergot; fl. ext. hydrastis; hydrastinin.

(l) **Astringents** (L. *ad*, to + *strĭngere*, to bind).—Precipitated chalk; troches of tannic acid; bismuth subcarbonate and subnitrate.

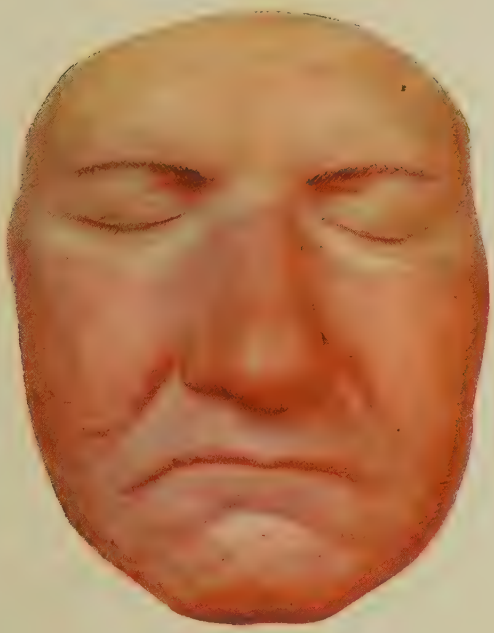
(m) **Neuromuscular Sedatives.**—Bromides; morphine and atropine hypo. tablets; chloral hydrate; morphine; ether; chloroform; tr. belladonna; tr. opii; valerian; ext. hyoscyamus; cocaine; paregoric; atropine sulphate; monobromide of camphor; tr. hyoscyami; asafœtida; antipyrine; codeine; hyoscine hydrobromide; tr. veratrum viride; whiskey.

Local Medicaments Mentioned in the Text.—(a) **Antiseptics and Astringents** (Gr. *ἀντί* against + *σήψις* putrefaction).—Ung. gall. comp.; glyceritum acidi tannici (one of tannic acid to four of glycerine); comp. tr. lavender; comp. tr. benzoin; tannic acid; boric acid powder; bichloride tablets; lysol; creolin; tr. myrrh; precipitated chalk; castile soap; green soap; peroxide of hydrogen; potassium permanganate; argyrol; chromic acid; carbolic acid; silver nitrate; acetic acid; alcohol; ung. gallæ; lead acetate; zinc borate.

(b) **Emollients; Vehicles; Protectives** (L. *emol'lio*, I soften).—Glycerine; camphorated oil; vaseline; starch; olive or cottonseed oil; talcum; bismuth; boric acid; cold cream; zinc oxide; ol. theobromæ.

(c) **Analgesics** (Gr. *ἀν* without + *ἄλγος* pain).—Orthoform; ung. stramonii; ung. gallæ comp.; ext. belladonna; lead and opium wash.

(d) **Miscellaneous.**—Picric acid; citric acid; sodium chloride tablets for preparing normal salt solution.



1. — *Acne rosacea.*

N° 813. Dr Guibout

2. — *Acne sebacea.*

N° 498. Dr Besnier.

3. — *Acne rosacea.*

N° 730. Dr Fournier.

4. — *Acne keloid.*

N° 1114. Dr Besnier.

St Louis Hospital Museum Paris.

SKIN DISEASES : **Varieties of acne.**

PART 5

SKIN DISEASES

Abscess.—L. *absces'sus*, a going apart. See Furunculus.

Acanthosis Nigricans.—See Keratosis or Acanthosis Nigricans.

Acne.—Gr. *ἀκνή* point. See Acne Vulgaris.

Cicatricial.—L. *cica'trix*, scar. See Dermatitis Papillaris Capilliti.

Keloid.—Gr. *κηλίς* scar + *εἶδος* form. See Dermatitis Papillaris Capilliti.

Necrotica.—Gr. *νεκρός* dead. See Acne Varioliformis.

Acne, Pustular, Sycosiform, Cicatricial, Keloid, Occurring on the Nape of the Neck.—L. *pus'tula*, pustule; Gr. *σύκον* fig.; L. *cicá'trix*, scar; Gr. *κηλίς* scar + *εἶδος* form. See Dermatitis Papillaris Capilliti.

Acne Rosacea.—Gr. *ἀκνή* point; L. *ros'a*, rose. A chronic reflex flushing or congestion of the nose and adjoining cheeks, sometimes including the chin and forehead in the midline, leading to permanent vascular dilatation (with visible dilated capillaries), sebaceous inflammation (acne), and sometimes tissue hypertrophy (rhinophyma: Gr. *ῥίς* nose + *φῦμα* growth).

Etiology.—The causal factors are those influences which favor habitual facial flushing and venous stasis, viz., digestive disturbances, constipation, alcohol, tea, coffee, hot drinks, highly seasoned foods, tobacco, gout, intranasal pressure or disease, especially inflammation of the hair follicles just within the nares, cosmetics, uncleanliness, exposure to cold winds, as in cabmen, exposure to great heat, exposure to the sun's rays, seborrhœa, feeble circulation due to cardiac, renal, pulmonary, or hepatic disease, debility, uterine disorders.

Prognosis.—Persistent treatment is productive of favorable results.

Treatment.—Attend first to the correction of all possible causal influences, and enjoin the observance of a correct hygienic regimen, *i.e.*, adequate rest and exercise, fresh air day and night, avoiding draughts, a daily morning tepid bath before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, early rising, rest before and after meals, a light, bland diet, abstinence from tea, coffee, alcohol, and tobacco, and regulation of the bowels (consult Dyspepsia, in Part 1; and for constitutional treatment, Gastritis, Chronic, in Part 1). The treatment, both constitutional and local, is the same as that of acne vulgaris, omitting only massage.

℞ Zinci sulphatis,
Potassii sulphureti, aa..... gr. v–xx
Aquæ..... ʒi
M. Sig.—Apply in sufficient strength and frequency to produce some irritation and desquamation. (Lotio Alba.)

Deodorized benzine is recommended by Bruck. In cleansing the parts with soap and water, which should be done daily, use not hot but tepid water. At night, the following may be applied,

℞ Sulphuris præcipitati..... gr. x–xxx
Resorcini..... gr. x–xx
Paraffini mollis, q.s., ad.... ʒi
M. Sig.—Apply at bedtime. (S. E. Dore.)

Employ electrolysis frequently, to destroy the telangiectases or dilated vessels. With a current of one-half to two milliampères, and the needle attached to the negative pole, insert the latter into the vessel, and keep it there until there is an "appearance of distinct blanching, enlarging to the size of a small pea"; this occurs within thirty seconds. Follow each séance by hot water applications for a few minutes, and then cold applications. (Stelwagon.)

In the oily cases, with enlarged glandular openings and slight connective-tissue hypertrophy, one may employ electrolysis (current of three to six milliampères, for twenty to forty seconds) within the openings and in the interspaces every few weeks; or frequent multiple punctures may be made, and bleeding favored by the application of hot water compresses, these to be followed later by cold compresses.

The X-ray is well recommended for bad cases (see Acne Vulgaris).

Rhinophyma is best treated by decortication with the scissors or knife, the parts being trimmed down to their normal size. Scarification, freezing with carbon dioxide snow, X-ray and radium therapy (*q.v.*) are other measures employed.

Acne Scrofulosorum.—L. *scrof'ula*, sow pig. See Acne Varioliformis.

Sycosiform, Keloid.—Gr. *σύκον* fig; *κηλίς* scar + *εἶδος* form. See Dermatitis Papillaris Capilliti.

Acne Varioliformis.—Gr. *ἀκνή* point; L. *vari'ola*, smallpox. A chronic, indolent, papulo-pustular folliculitis, which predominates on the forehead, temples, and scalp, although it may occur on the thorax, and leaves deep-pitted scars like those of vaccinia or smallpox. By these scars it is chiefly characterized.

Similar lesions occur on the face, trunk, or extremities in tuberculous subjects, variously designated acne scrofulosorum, acnitis, and folliclis.

Prognosis.—Most cases yield to treatment, but recurrences are almost certain.

Treatment.—Keep the affected surface clean with soap and water, and perhaps bichloride of mercury, 1 : 4000 to 1000; and apply one of the following preparations at night, to be washed off in the morning if desired,

℞ Hydrargyri ammoniati..... gr. xv–xxx
Petrolati mollis..... ℥i

℞ Cinnabaris,
Sulphuris præcipitati, aa..... gr. xvi
Petrolati mollis..... ℥i
(Sabouraud.)

After the eruption has disappeared, continue the observance of strict cleanliness, in order to prevent, if possible, recurrence. Stelwagon suggests for the latter purpose,

℞ Resorcinolis..... gr. xx–xc
Acidi borici..... gr. lxxv
Aquæ..... ℥iv

The internal administration of codliver oil, iron, or arsenic (see Part 11) is usually indicated. Crocker recommends potassium iodide. Good hygiene, of course, is of prime importance, *e.g.*, adequate rest and exercise, fresh air day and night, a daily morning warm bath in a warm room, before breakfast, followed by a cool spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, rest before and after meals, a nutritious diet, and regulation of the bowels.

In rebellious cases, one may try vaccines or the X-ray, as in acne vulgaris (*q.v.*)

Acne Vulgaris; Acne.—Gr. *ἀκνή* point; L. *vulgar'is*, common. A common, chronic, papulo-pustular, sometimes deep nodular inflammation of the sebaceous glands of the face, and sometimes the shoulders and chest, due at least partly to infection of retained secretion, and occurring chiefly in young people.

The chief causal influence is an irregular mode of life, irregular hours of eating, improper food, the excessive use of tea, coffee, alcohol, or tobacco, over-study, uncleanliness, masturbation, sedentary habits, etc., leading to indigestion, constipation, intestinal toxæmia, anæmia, general debility, menstrual irregularities, scurvy. Other contributory causes are dirty atmosphere, exposure to cold winds, irritating cosmetics, chlorine, chrysarobin, paraffin, tar, including tar soap, oils and fats, bromides and iodides.

Prognosis.—Well-directed treatment should be effectual in the course of several months to a year or longer, according to the obstinancy of the case.

Treatment.—Attend first to the general health, and enjoin the observance of a correct hygienic regimen, *e.g.*, adequate rest and exercise, fresh air day and night, a daily morning warm bath before breakfast, in a warm room, followed by a cool spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, early rising, rest before and after meals, a plain but nutritious diet, abstinence from tea, coffee, alcohol, and tobacco, and regulation of the bowels. The dietetic treatment is, in principle, the same as that of Gastritis, Chronic (Part 1). As tonics, one may consider the use of stomachic bitters, such as nux vomica, Blaud's pills, elixir ferri, quininæ, et strychninæ phosphati, Fowler's solution, and codliver oil. Calcium sulphide, ichthyol, and brewer's yeast have their advocates (see Part 11, Drugs). Saline laxatives are often indicated, and it is well to prescribe a glassful of Vichy, or of hot water containing about one-quarter teaspoonful of sodium bicarbonate, one-half to one hour before meals and also between meals.

Remove all comedones or blackheads by lateral pressure with the thumb-nails, or with a watch-key-like instrument, a comedo-extractor, or the back of a broad dermal curette. Evacuate all pustules and touch the base with carbolic acid or alcohol on a fine probe. Instruct the patient to wash the parts each night with tincture of green soap and hot water, then steam or sponge with very hot water for five to ten minutes, then massage with a one-inch cupping glass, wash and rinse again, dash with cold water, wipe dry, and finally apply one of the following medicaments, which should be allowed to dry on the face and be washed off in the morning with warm water:

℞ Calcis..... ℥ss
Sulphuris sublimati..... ℥i
Aquæ destillatæ..... ℥x
M. Boil down to six ounces and filter.

Sig.—Dilute at first with about ten parts of water, and bathe the skin for five to ten minutes. Increase the strength gradually every few nights, with the purpose of producing some irritation.—Liquor calcis sulphuratæ or Vleminckx's solution.

℞ Zinci sulphatis,
Potassii sulphureti, aa..... ʒss–iv
Glycerini..... ♏iv–viii
Aquæ..... ʒiv

M. Sig.—Apply two or three times daily, beginning with the weaker solution and gradually increasing the strength until some irritation and desquamation are produced. (Lotio alba.)

℞ Hydrargyri bichloridi, 1 : 500.... ʒiv

Sig.—Dilute at first with three or four parts of water, and gradually increase to full strength, with the object of producing some irritation.

Do not employ mercury preparations too soon after those of sulphur, to avoid the formation of black comedones of mercuric sulphide.

℞ Sulphuris præcipitati..... ʒi–ii
Adipis benzoinati..... ʒi

M. Sig.—Apply at night and wash off in the morning.

℞ Sulphuris præcipitati..... ʒss–ii
Ichthyolis..... ʒi–ii
Adipis vel petrolati mollis..... ℥i

In extremely sluggish cases, Stelwagon recommends the addition to each ounce of ointment of sapo viridis, ʒi–ii, or salicylic acid, gr. x–xx. Should the sulphur preparations be without effect, he advises one to wait several days, and then prescribe the following two preparations alternately, viz.,

℞ Hydrargyri chloridi corrosivi... gr. ii–xii
Zinci sulphatis..... gr. xx
Tincturæ benzoini..... ʒii
Aquæ, q.s., ad..... ʒiv

Misce et filtra. Sig.—Apply three times daily.

℞ Hydrargyri ammoniati..... gr. xv–xlviii
Petrolati..... ʒi

M. Sig.—Apply night and morning.

When irritation or scaliness ensues, intermit the treatment, and apply cold cream for a few days.

More radical methods of treatment are with peeling pastes:

℞ Resorcinolis..... ʒss+
Zinci oxidi..... ʒi
Terræ siliceæ..... gr. xii
Adipis benzoinati, q.s., ad..... ʒi
(Stelwagon.)

℞ Beta-naphtholis..... ʒss–ii
Sulphuris præcipitati..... ʒiv
Saponis viridis,
Unguenti aquæ rosæ, aa..... ʒii
(Lassar.)

Apply the paste at night, and leave it on for ten to thirty minutes, or until burning begins; then wipe it off with a cloth moistened with olive oil, wash with soap and warm water, dry, and apply cold cream. Repeat this every night or two or three times daily until desquamation occurs. Then wait, and resume the treatment as soon as the desquamation ceases. The patient should remain indoors during the treatment.

Salicylic ionization (see Ionic Medication in Part 1) is recommended by some.

Röntgentherapy, however, is considered the most effectual method of treatment. The eyes, eyebrows, and scalp should be protected by a thin covering of tin or lead foil. Pusey gives one to three exposures a week, "of five minutes duration, with the wall of the tube at a distance of six inches from the surface, and with only enough X-rays to produce a faint green glow in the tube," and the exposures are continued until effectual (see also under Eczema). The X-rays should be used cautiously so as to avoid atrophy and consequent wrinkling of the skin and also burns. (See Röntgenology in Part 1.)

For acne of the trunk, which may be more energetically treated than that on the face, Stelwagon recommends the application of formaline "of sufficient strength to produce considerable irritation," followed by boric acid as a dusting powder. The undershirt should be frequently boiled.

In regard to vaccine therapy, Haldin Davis says: "Vaccines are chiefly of value as an adjunct to other measures. An autogenous acne bacillus vaccine in doses of five to ten millions and upwards, administered every ten days, when the comedo is the predominant feature of the case, and autogenous staphylococcus vaccine beginning with about 200 millions, when there is much pustulation, is sometimes productive of good results."

Acnitis.—Gr. *ἀκνή* point + *-ιτις* inflammation. See Acne Varioliformis.

Acrodynia; Epidemic Erythema.—Gr. *ἄκρον* extremity + *ὀδύνη* pain; *ἐπί* on + *δῆμος* people; *ἐρύθημα* redness. A rare, epidemic, afebrile, probably toxic disease, occurring usually among the unhygienic, and characterized by nausea, vomiting, diarrhœa, pain in the extremities, with hyperæsthesia and paræsthesia, followed by anæsthesia, and an erythemato-vesiculo-bullous rash, terminating usually in recovery within one or two months.

Treatment.—This is symptomatic. Counter-irritation over the spine is generally advised.

Actinomycosis.—Gr. *ἀκτίς* ray + *μύκης* fungus. An uncommon, subacute or chronic infectious disease, caused by the streptothrix actinomyces (Gr. *στρεπτός* twisted + *θρίξ* hair) or ray fungus, and transmitted by

plants or infected animals, principally cattle. It affects the head, neck, skin, thoracic viscera or abdominal viscera, and is characterized by lumpy, granulomatous swellings, which tend to suppurate, with the formation of sinuses or fistulæ, in the discharge from which pinhead-sized, sulphur yellow granules may be demonstrated. Examined microscopically, these granules reveal radiating bulbous threads and spores.

Prognosis.—Bad in brain, pulmonary, and intra-abdominal cases; good in skin cases.

Treatment.—Complete or as nearly complete excision as possible, followed by the application of the Paquelin cautery and packing with iodine or iodoform gauze, is the best mode of treatment. If this is not feasible, lay wide open all abscesses, sinuses, and fistulæ, curette, remove affected bone, irrigate thoroughly with bichloride solution, 1 : 1000, and pack with gauze moistened with silver nitrate, 10 per cent., Lugol's solution (*q.v.*), tincture of iodine, potassium iodide, 10 per cent., corrosive sublimate, 1 : 1000, copper sulphate, 1 per cent., or iodoform gauze. The thermocautery may be applied after curretting. Unremovable granulomata may be injected, every few days, with carbolic acid, 5 per cent., or tincture of iodine, 16 minims, or 20 per cent., silver nitrate solution, 16 minims, or 1 to 2 c.c. of potassium or sodium iodide and iodine, aa 1 gram, in 10 grams of distilled water. The X-rays (*q.v.*) are well recommended for both cutaneous and visceral cases. Relapses should be attacked promptly.

Administer potassium iodide (*q.v.* in Part 11) internally in as large doses as can be borne, and over a long period of time, with intervals of, say, four or five days rest after each week of medication. Says Ochsner, 90 grs., in half a pint of milk followed by a pint of hot water, every eight hours, for four days, repeated several times after a week's intermission, cures where smaller doses fail.

Bevan proposes the internal administration of copper sulphate (*q.v.*), gr. ¼ to ½, increased, if necessary, to gr. i, in pill form, t.i.d., and the use of the 1 per cent. solution locally.

Arsenic is also recommended. "Föderl has cured six patients with hypodermatic injections of cacodylate of sodium," writes Forchheimer, who adds: "This is conveniently prescribed as a 10 per cent. aqueous solution, of which 0.5 c.c., or minims viiss, containing 0.05 gm., or gr. ¾, may be given as an initial dose, the dose to be increased daily until physiological effects are produced; in some instances as much as 1 gm. or gr. xv may be ultimately administered." This drug, it should be borne in mind, has caused permanent optic atrophy.

Oil of eucalyptus (*q.v.*) is claimed to have cured a case of pulmonary actinomycosis (J. H. Wright). In pulmonary cases, one may try the injection into the lung, at the point of greatest dulness, of a half dram of potassium iodide solution, 1 per cent., every third day. (Sawyers.)

Abdominal cases may require operative interference: free incision, curettage, drainage; excision if feasible.

Lingual involvement calls for excision.

Brain cases should be trephined.

Fresh air and a liberal diet should be prescribed, and all carious teeth should be treated or removed and the sockets treated.

(Nocardiosis is a very rare disease, caused by organisms resembling the actinomyces bovis, and simulating pulmonary tuberculosis or cutaneous actinomycosis.)

Aden Ulcer.—L. *ul'cus*, ulcer. See Phagedena Tropica.

Adenoma Sebaceum.—Gr. *ἀδήν* gland + *-ωμα* tumor; L. *sebac'eus*, pertaining to sebum. Hyperplasia of the sebaceous glands, limited for the most part to the middle two-thirds of the face, beginning in early life, usually in the mentally defective, and characterized by pinhead to split-pea sized, waxy to reddish, firm, convex, telangiectatic papules imbedded in the skin.

Treatment.—Remove each lesion by electrolysis, the knife, curette, or galvanocautery. In employing electrolysis, introduce the needle, attached to the negative pole, into the centre of the growth, and allow a current of three or four milliampères to act for five to thirty seconds, or until "distinct blanching enlarging to the size of a small pea" occurs. (Stelwagon).

Ainhum (African).—A disease of dark-skinned races of warm countries, characterized by the gradual spontaneous amputation of one or more of the toes or fingers, usually the little toe.

Treatment.—Divide the constricting band freely, if there is any possibility of saving the toe; otherwise amputate the toe.

Albinism.—L. *alb'us*, white. Albinism or congenital leucoderma is the congenital absence, partial or complete, of the pigment of the skin. There is no treatment.

Aleppo Boil.—See Oriental Sore.

Alopecia; Calvities; Baldness.—Gr. *ἀλώπηξ* fox; L. *calvi'ties*, baldness. Baldness may be conveniently divided into four categories: (1) congenital alopecia; (2) senile

alopecia; (3) premature, simple, idiopathic or symptomatic alopecia, including the common alopecia seborrhoica (*q.v.*); and (4) alopecia areata (*q.v.*)

Alopecia prematura symptomatica has a varied etiology, viz., fevers (typhoid fever, secondary syphilis, etc.), cachexias (tuberculosis, leprosy, diabetes mellitus, myxœdema, or hypothyroidism, etc.), chronic eczema, psoriasis, erysipelas, lupus erythematosus, folliculitis decalvans, tinea or ringworm, favus, morphœa, late atrophic or ulcerative syphilodermata, confluent smallpox, dermatitis seborrhoica (the commonest cause of baldness), thallium acetate administered for excessive sweating in tuberculosis, possibly heredity.

The treatment depends upon the cause (*q.v.*, in its appropriate alphabetical place).

Alopecia Areata.—Gr. ἀλώπηξ fox; baldness; L. *ar'ea*, a limited space. Alopecia areata is characterized by one or several, usually sharply circumscribed, asymmetrically situated patches of complete baldness, "unattended by any apparent alteration in the skin." There are recognized a trophoneurotic form associated with trigeminal neuralgia, worry, anxiety, nervous shock, influenza, leucodermia, congenital syphilis, tuberculosis, the menopause, etc., and a parasitic, contagious form, the so-called true alopecia areata, with the marginal diseased hairs shaped like an exclamation point.

Prognosis.—In those under thirty, and in those not over forty or forty-five where but several patches are present, the outlook is favorable. In the generalized cases the prognosis is not so good. If no downy growth appears in the course of a few months, the outlook is not very promising.

Treatment.—Rub into the skin, over an area of one or two inches, and about one-half inch beyond the border of the patch, by means of a cotton-tipped matchstick, pure liquid carbolic acid, which, in children or those of sensitive skin, or upon other parts than the scalp, may be diluted with an equal quantity of glycerine or alcohol. Repeat the application at intervals of a few days.

Instead of carbolic acid, one may use chrysarobin, ʒi, in petrolatum, ʒi, which should be rubbed in energetically night and morning; or a saturated solution of chrysarobin in chloroform may be painted on, and the resulting film covered with several coatings of flexible collodion. One must caution the patient against carrying the chrysarobin to the eyes and clothing, and also warn him of the possible occurrence of a general erythema.

Pilocarpine (*q.v.* in Part 11) is recommended.

As a precaution against autoinfection it is well to bathe the whole scalp occasionally with, say, bichloride of mercury, gr. viiss–xv, or formaline, ʒi–iii, to the pint of alcohol (Pusey), with a shampoo about once a week; and, since the disease is sometimes endemic, precaution should be taken against its dissemination by means of combs, hats, etc.

For debility, prescribe codliver oil, together with iron, or arsenic (see Part 11). Enjoin an outdoor life, free from worry. Dental caries, visual and other defects should receive attention.

Alopecia, Cicatricial. L. *cica'trix*, scar. See Folliculitis Decalvans.

Idiopathica.—Gr. ἴδιος own + πάθος disease. See Alopecia.

Alopecia Seborrhœica.—Gr. ἀλώπηξ fox; L. *se'bum*, suet + Gr. ῥοία flow. This is the commonest form of baldness. It is associated with scaling or dandruff and hypersecretion of sebum (seborrhœic dermatitis).

Prognosis.—Further loss of hair may be prevented by persistent treatment; and if the condition has not been too long neglected, a regrowth of hair may occur.

Treatment.—Rub thoroughly into the scalp every night, or every other night, or less often, as deemed requisite, one of the ointments given below. The inunction is best performed by another person, and should be accompanied by vigorous pinching and rubbing of the scalp. A cloth may then be pinned or tied about the head in the form of a nightcap. In the morning, shampoo the head thoroughly with hot water and castile soap, or tar soap, or tincture of green soap, or any kind of soap, using a hand-brush if desired, rinse and dry thoroughly with a clean towel. During the day, one of the lotions given below may be applied, with flannel or sponge, to the scalp:

℞ Unguenti hydrargyri nitratis.... ʒi–iv
Olei cadini..... ʒi
Olei olivæ..... ʒii
Adipis lanæ hydrosi vel petrolati ʒiv
(Stelwagon.)

℞ Acidi salicylici..... gr. x–xxx
Sulphuris præcipitati..... ʒi–ii
Petrolati mollis, q.s., ad..... ʒi

℞ Hydrargyri chloridi corrosivi.... gr. viiss
Alcoholis..... Oi–ʒiv
(Solution, 1 : 1000 to 1 : 250)

℞ Formalin..... ʒi–iii
Alcoholis..... Oi

℞ Resorcinolis..... ʒi–ii–iii
Acidi salicylici..... ʒi–ii
Alcoholis seu spiritus myrciæ ... ʒiv

℞ Resorcinolis..... ʒi–ii
Olei ricini..... ʒss
Olei tiglii..... ♏iv–xx
Acidi carbolici..... gr. xx–xl
Alcoholis seu spiritus myrciæ... ʒiv
(Stelwagon.)

In those of white or gray hair, resorcin should be applied only to the scalp, since it may impart a dirty yellowish tinge to the hair. Croton oil should be used very cautiously, since it is apt to produce vesication.

℞ Tincturæ cantharidis..... ʒii–iv
Tincturæ capsici..... ʒiv–viii
Alcoholis, q.s., ad..... ʒiv

℞ Pilocarpinæ..... gr. xx–xl
Alcohol.s..... ʒiv

Edgar says: "When there is no dandruff, pilocarpine is incomparably the best remedy, thoroughly rubbed into the scalp every day."

If the lotions are too drying, rub a little almond oil, cold cream, or vaseline into the scalp. Should irritation or soreness supervene in the course of the treatment, intermit the latter.

After an apparent cure, occasional use of the lotions should be continued indefinitely.

Zinc ionization (see Ionic Medicine in Part 1) is recommended.

Treat the patient constitutionally as indicated. Arsenic may be given for a long period. Sulphur and pilocarpine may be of benefit (see Drugs, Part 11).

The above treatment presupposes that the disease is due to a microörganism residing deep within the hair follicles. On beginning the treatment, therefore, the patient should buy a new hat. After each shampoo he should go over that part of the inside of the hat which comes in contact with the head with alcohol, ether, or chloroform. He should, after each shampoo, boil or scrub with soap and hot water his brush and comb, and he should carry his own brush and comb with him in barber shops.

Alopecia Simplex seu Idiopathica.—L. *sim'plex*, simple; Gr. *ἴδιος* own + *πάθος* disease. Many cases of so-called simple or idiopathic alopecia are really alopecia seborrhœica (*q.v.*, above). The treatment is perhaps the same. Pilocarpine is especially indicated.

Anal Pruritis.—See under Pruritus.

Anaphylaxis; Anaphylactic Shock.—See Part 1.

Anatomic Tubercle; Verruca Necrogenica; Post Mortem Wart.—Gr. *ἀνά* apart + *τέμνειν* to cut; L. *tuber'culum*, nodule. See Tuberculosis Cutis.

Angiokeratoma.—Gr. *ἀγγεῖον* vessel + *κέρας* horn + *-ωμα* tumor. A rare affection, characterized by the occurrence on the extremities of persons, usually children, with a chilblain circulation, of small, wart-like excrescences situated upon a purple, vascular or telangiectatic base (so-called telangiectatic warts).

Treatment.—Destroy each lesion with the galvanocautery or by electrolysis. Insert the needle, attached to the negative pole, into the base of the lesion and employ a current of two to five milliampères for several to thirty seconds, or until pronounced blanching occurs. For the correction of the underlying vascular atonicity, prescribe adequate hand and foot covering in cold weather, active exercise, fresh air day and night, a daily morning warm bath before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, nutritious food, tonics, rest before and after meals, and regulation of the bowels.

Angioma.—Gr. *ἀγγεῖον* vessel + *-ωμα* tumor. See Nævus Vasculosus, Telangiectasis, and the following.

Angioma Cavernosum.—See Nævus Vasculosus.

Angioma Serpiginosum.—Gr. *ἀγγεῖον* vessel + *-ωμα* tumor; L. *ser'pere*, to creep. A very rare disease of infancy and early childhood, characterized by the occurrence of roundish patches of minute, red, vascular points, like grains of cayenne pepper, which slowly and persistently spread peripherally with central clearing.

Treatment.—Excision and cauterization have been unsuccessful. Crocker suggests the employment of electrolysis (see under Acne Rosacea) along the border of the affected area, with the object of producing occlusion of as many vessels as possible.

Angioneurotic Œdema; Giant Urticaria.—Gr. *ἀγγεῖον* vessel + *νεῦρον* nerve; *οἴδημα* swelling; L. *urtic'a*, nettle. A disease related, apparently, to urticaria and to purpura, characterized by recurrent, sudden, more or less transient, circumscribed, white, œdematous swellings, occurring usually on the face, hands, and genitalia, but sometimes affecting the legs, pharynx, tongue, larynx, gastro-intestinal tract, etc., each attack lasting from a few hours to one or two days. Colicky pains, nausea and vomiting may accompany the attacks. Fatal œdema of the larynx has occurred.

One should bear in mind that transitory swellings occur in exophthalmic goitre, myx-

œdema, and organic nervous diseases, *e.g.*, tabes, syringomyelia, and tumors of the cord.

Etiology.—Heredity and neurasthenia are factors. Nervous fatigue, emotional disturbances, exposure to cold, and rarely the diet (coffee, tea, strawberries, excessive meat) are provocative influences. Sensitization to certain foreign proteins, e.g., egg white, horse dandruff, pollen, etc., may possibly be causative.

Treatment.—During an attack, administer saline laxatives, and put the patient on a barley and broth diet for two or three days. Calcium lactate, chloride, or bromide (*q.v.* in Part 11) is recommended. For colicky pains, apply a hot water bag to the abdomen and administer a diffusible stimulant, such as the following:

℞ Spiritus ammoniæ aromatici,
Spiritus chloroformi,
Syrupi zingiberis,
Tincturæ lavandulæ compositæ, aa.. ℥ss

M. Sig.—One or two teaspoonfuls in a glassful of hot water.

Morphine is sometimes required. In great œdema of the tongue, paint the tongue with cocaine solution, 5 per cent., or adrenalin, 1 : 1000, and if necessary, make several needle punctures, or apply leeches. In œdema of the larynx, spray the latter with cocaine, 2 per cent., in adrenalin, 1 : 2000; and if necessary, make multiple punctures into the œdematous tissues (previously cocainized) with a laryngeal lancet, by the aid of a laryngeal mirror and reflected light, with the tongue pulled forward by the patient. The application of ice is contraindicated. If these measures are unsuccessful, perform tracheotomy or intubation without delay (see Part 1, under Diphtheria).

Prescribe an invigorating hygienic regimen, adequate rest and exercise, fresh air day and night, a daily morning tepid bath before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, rest before and after meals, a well-balanced diet, regulation of the bowels, and perhaps tonics. Osler recommends strychnine in large doses for nervous anæmic patients. Quinine, arsenic, atropine, the nitrites (sodium nitrite, nitroglycerine, erythrol tetranitrate, mannitol hexanitrate), and calcium salts are variously recommended. (See Part 11, Drugs.) The dose of the nitrites should be gradually increased until flushing and headache occur; then, after a rest of five days, the drug should be continued over a prolonged period in the proper physiological dose for periods of ten days alternating with intervals of five days. (Osler.)

Anhidrosis.—Gr. ἀν priv. + ἱδρῶς sweat. An abnormal or pathological diminution or suppression of the sweat secretion.

Anhidrosis occurs in diabetes, nephritis, fevers, malnutrition, insufficient washing, and in the affected areas in ichthyosis, anæsthetic leprosy, scleroderma, psoriasis, cheloid growths, nerve injuries, and sometimes eczema and pityriasis rubra pilaris.

The treatment is that of the underlying cause.

Anthrax.—Gr. ἄνθραξ coal, carbuncle. An acute infectious and contagious disease, caused by the bacillus anthracis, and transmitted from infected cattle, sheep, and horses to man, in whom it occurs in three forms: cutaneous (malignant pustule and malignant œdema), pulmonary, and gastrointestinal.

Malignant pustule is marked by the appearance of a red, itching, painless, inflammatory papule, which soon becomes a sanguineous vesicle, which within thirty-six hours is replaced by a gangrenous eschar surrounded by a border of vesicles and marked brawny œdema. Cover-slip preparations and cultures should be made from the lesion and a mouse or guinea-pig inoculated. By animal inoculation the diagnosis is made in two days.

Malignant œdema is characterized by a diffuse, flat, œdematous swelling, which is comparatively painless, and without redness, vesiculation, or fever. Gangrene, however, soon follows, with severe constitutional symptoms and death.

The gastro-intestinal form of anthrax resembles "ptomaine poisoning."

Both the pulmonary and intestinal forms are rapidly fatal; the malignant pustule is the least fatal. Serum therapy, however, has improved the prognosis.

Anthrax occurs among veterinarians, stablemen, farmers, shepherds, brush-makers, leather workers, tanners, felt-makers, mattress-makers, wool-sorters, horn-workers, rag-pickers, knackers, butchers, and plasterers.

Treatment.—In cutaneous cases, excise the lesion at once well beyond its border, followed by the actual cautery or thorough swabbing of the wound with pure carbolic acid or caustic potash; or perhaps better, destroy the lesion thoroughly with the actual cautery without previous excision.

If excision or the use of the actual cautery is not feasible, inject pure carbolic acid,

which is said to be less dangerous than the solution, beneath and all around the lesion, and repeat the injection every four hours. The affected parts should be kept absolutely at rest.

Since ipecac is highly recommended as a specific, the powder may be used locally as a dressing, and given internally in doses of five to ten grains every three or four hours (see Part 11). Quinine (*q.v.*) in large doses is also recommended.

Anti-anthrax serum is productive of very good results, and should be used. An initial dose of 80 to 100 c.c., divided in three or four portions, may be injected under the skin at different points, or better, administered intravenously (*q.v.* in Part 1), and repeated in twenty-four hours, if no improvement is noted. Daily injections may have to be administered. In severe cases, 100 c.c. may be injected several times a day. It is said to be harmless, but for the ether it contains (see Anaphylactic Shock, in Part 1.)

An abundance of concentrated nutriment should be given, and also stimulants when required. In the intestinal form, active purgation may be practiced in the beginning, as some recommend, but so far as cleansing the bowel of bacilli is concerned, it would seem futile.

Prophylaxis embraces cleanliness, the protection of sores, the wearing of respirators and gloves, the disinfection of hides, hair, and rags, the cremation or deep burying (six feet) of infected animals, which should first be covered with lime or petroleum, and the yearly immunization of animals by vaccination with attenuated cultures of the anthrax germ. All the bed-clothing, towels, etc., used on the patient, should be burned; and feeding utensils, etc., should be subjected to a prolonged high temperature, in order to destroy spores.

Ant Sting.—See Bites.

Anus, Pruritus of the.—L. See under Pruritus.

Argyria.—Gr. *ἄργυρος* silver. A slaty discoloration of the skin resulting from the prolonged or free internal administration of silver preparations. It is incurable.

Atheroma.—Gr. *ἀθήρη* porridge + *-ωμα* tumor. See Sebaceous Cyst.

Atrophia Cutis.—L.; Gr. *α* priv. + *τροφή* nutrition; L. *cu'tis*, skin. **A. Atrophia Cutis Senilis.**—Senile atrophy or old age of the skin is characterized by thinning and the formation of pigmented spots and patches, which may become greasy, crusted or scaly, and thickened, with the development of flat warts (keratosis senilis), which display a tendency to epitheliomatous degeneration.

TREATMENT.—Enjoin the observance of good hygiene, *e.g.*, adequate rest and exercise, fresh air, frequent bathing, light nutritious food, regular hours of eating and sleeping, and regulation of the bowels. A little almond oil, cold cream, or vaseline should be occasionally applied in order to counteract scurfiness and dryness. The oil may be rubbed in every night and washed off with soap and warm water in the morning, and then reapplied, if required.

For the seborrhœic spots, keratoses, or warts, one may rub in the following ointment every night:

℞	Sulphuris præcipitati	gr. v–xxx–l
	Acidi salicylici	gr. iii–xxx
	Unguenti aquæ rosæ	℥ss
		(Stelwagon.)

The ointment should be of such strength as just to stop short of causing irritation.

Sabouraud recommends the following:

℞	Potassii chloratis	gr. xxiv
	Sulphuris præcipitati	gr. xlviii
	Resorcini	gr. xvi
	Petrolati	℥i

If the flat warts resist the above ointment, Sabouraud destroys them by painting with chromic acid solution, 10 per cent., up to the concentrated solution.

The X-rays and radium are effectual in removing both senile keratoses and resulting epitheliomata (*q.v.*). The cautery or excision may also be employed. Haldin Davis prefers the use of carbon dioxide snow, a pencil of the snow being pressed firmly on the wart until the latter is frozen to the base.

B. Atrophia Cutis Universalis (Diffusa Idiopathica).—This affection is not confined to old age. The treatment embraces good hygiene, tonics (iron; arsenic; codliver oil; see Part 11), and the local use of cold cream or almond oil to reduce the dryness and harshness. A cure is not to be expected.

Atrophia Unguium.—L.; Gr. *α* priv. + *τροφή* nutrition; L. *ung'uis*, nail. See Nail Diseases.

Bagdad Boil.—See Oriental Sore.

Baldness.—See Alopecia.

Barber's Itch.—See Tinea Sycosis.

Beaded Hair.—See Monilethrix, under Hair Diseases.

Bed-bug Bites.—See Bites.

Bed-Sore; Decubitus.—See Part 1, General Medicine and Surgery.

Bee Sting.—See Bites.

Birthmark.—See Nævus Vasculosus.

Biskra Button.—See Oriental Sore.

Bites.—Insect bites are characterized by an inflammatory wheal, resembling that of urticaria, but showing a central, reddish punctum.

For bed-bug, mosquito, and flea bites, and for bee, wasp, spider, ant, or caterpillar stings, use a strong sodium bicarbonate solution, or diluted ammonia water, or spirits of camphor, or a 1 to 3 per cent. menthol lotion or ointment, or a 5 per cent. ichthyol lotion, or camphor-chloral (*q.v.*), 1 to 2 per cent. in vaseline, or one of the following:

℞	Calaminæ	gr. xl
	Zinci oxidi	gr. lxxx
	Acidi borici	ʒi
	Glycerini	♏ii–viii
	Acidi carbolici	♏viii–xxx
	Liquoris calcis	℥i
	Aquæ, q.s., ad	℥iv
		(Calamine lotion.)
℞	Thymolis	gr. iv–viii
	Glycerini	ʒi
	Alcoholis	℥i
	Liquoris potassæ	ʒss
	Aquæ, q.s., ad	℥iv
		(Stelwagon.)
℞	Camphor-chlorali, Acidi carbolici, aa	gr. xx–lvii
	Mentholis	gr. xx–xl
	Extracti hamamelidis destillati, Alcoholis, aa	℥ii
		(Pusey.)

For infection with the Harvest Bug (Leptus), use the above calamine lotion, or the following:

℞	Sulphuris sublimati, Balsami Peruviani, aa	℥ii–vi
	Adipis benzoinati, Petrolati, aa, q.s., ad	℥iv

The Jigger, Chigre or Chigo, or Sand-flea (Pulex penetrans) is killed by inunction with carbolized oil or kerosine, say 3 per cent. Extract the parasite with a blunt needle; but (Author?) warns against rupturing the sac, as "liberation of the eggs may set up serious and even fatal inflammation." After the extraction of the parasite, employ the carbolized calamine lotion given above.

As a prevention against fleas, one may pin on, at different parts of the underwear, several small, loosely woven bags containing camphor, menthol, or pyrethrum powder. The essential oils, oils of eucalyptus, pennyroyal, and cassia, are also used.

Before attempting to remove a wood-tick, first kill it by the application of kerosene, turpentine, an essential oil, or tobacco-juice. For the treatment of snake-bite, see Part 1, under Poisoning: II.

Blackhead or Comedo.—L. *come'do*, blackhead. See Acne Vulgaris.

Black-Tongue.—See Tongue Diseases.

Blastomycosis; Oidiomycosis; Saccharomycosis.—Gr. *βλαστός* germ + *μύκης* fungus; *ὠόν* egg; *σάκχαρον* sugar. A rare, very chronic, yeast-fungus disease, affecting usually the skin, sometimes the blood and viscera, and characterized by one or more well-elevated, warty or papillary, or fungating lesions, studded with miliary abscesses, with ultimate ulceration and scarring.

The disease may resemble lupus verrucosus or vulgaris, mycosis fungoides, coccidial granuloma, sporotrichosis, carcinoma, or syphilis.

The blastomycetes is demonstrated by smearing some of the pus or teased tissue on a slide, covering it with a 20 to 30 per cent. solution of potassium hydroxide and a coverglass, and examining the specimen after ten to sixty minutes.

Pulmonary cases resemble pulmonary tuberculosis; general systemic cases resemble pyæmia.

Prognosis.—In skin cases, the prognosis under treatment is good; but recurrence is frequent. Systemic infection is fatal.

Treatment.—Administer potassium or sodium iodide in gradually increasing doses, up to gr. xx–xxx + t.i.d., continued for a number of months, with intermissions of, say, four or five days after each week of medication. See Part 11.

Employ antiseptics locally, followed, say, by ichthyol ointment (*q.v.*). Curettage is perhaps inadvisable, owing to the danger of disseminating the disease.

If potassium iodide fails, one may resort to the actual cautery, or to a wide and deep dissection, followed by skin grafting (Walker and Montgomery). Bevan suggests the internal administration of copper sulphate, gr. ¼, increased to gr. ss–i, t.i.d., and the local use of a 1 per cent. copper sulphate wash. Copper sulphate should be tried in systemic cases, since the iodides have proved ineffectual in these cases.

Boil.—See Furunculus.

Bromidrosis.—Gr. *βρῶμος* stench + *ἱδρώς* sweat. Stinking sweat may be general or local.

Etiology.—General bromidrosis may occur in rheumatic fever, smallpox, cholera, typhoid fever, syphilis, tuberculosis, uræmia, anæmia, scurvy, nervous conditions, and after the ingestion of onions, garlic, asafœtida, sulphur, copaiba, benzoic acid, musk, etc.

Local bromidrosis is usually an accompaniment of hyperidrosis (*q.v.*), and is the result of bacterial decomposition of the sweat.

Prognosis.—The treatment of stinking feet is always beneficial and usually curative, if the disease is acquired and not of too long standing.

Treatment.—Scrub the feet thoroughly, twice daily, with soap and hot water, rinse, bathe in an antiseptic solution, such as bichloride, 1 : 2000 to 1000, or formaline, 1 : 500 to 100, or potassium permanganate, 1 : 500 to 100, or boric acid, a heaping tablespoonful to the pint, or alcohol, full strength or diluted; then dry the feet and dust them freely with boric acid powder, to which may be added salicylic acid, gr. xx–xlviii to the ounce, or else anoint them with salicylated lanolin or lard, gr. xiiad ʒi. Wear a fresh pair of boiled stockings daily. Shortly after beginning treatment, buy a new pair of easy-fitting shoes, and keep the shoes and stockings dusted with boric or boric and salicylic powder. It is well to change and air the shoes daily. Hyperidrosis (*q.v.*), should receive attention. Sulphur (see Part 11) may be given internally. Prolonged standing should be avoided.

Bug-Bites.—See Bites.

Burns.—For shock, lower the head, surround the patient with hot water bottles wrapped in towels, placed near but not in contact with the skin, and observe absolute quiet. Administer hot normal saline solution (gr. xlvi to the pint; temp. 102° F.) subcutaneously very slowly, no more than a pint at a time, according to Crile, to avoid pulmonary œdema, and repeat every hour until the pulse is restored. Gum-salt solution (*q.v.* in Part 11) is better. Brandy, digitalin, strychnine, camphor, atropine, caffeine, and pituitrin may be of some service, especially the latter. (See Drugs, Part 11). Morphine, gr. ⅛ to ¼, is of value. Matas injects slowly into the rectum—black coffee, 8 ounces, panopepton, 1 ounce, brandy or whiskey, 1 ounce, tincture of digitalis, 15 minims, and laudanum, 10 minims, which may be repeated after two hours, if necessary. Anders' favorite formula for shock is:

℞ Adrenalini chloridi (1:1000). . (♏v)
Morphinæ hydrochloridi. . . . . gr. ¼
Nitroglycerini . . . . . gr. ⅟₁₀₀
Atropinæ sulphatis . . . . . gr. ⅟₁₀₀

If respiration ceases, perform rhythmic thoracic compression (see Asphyxia, in Part 1), with the head low and the tongue pulled forward, but not too far. The continuous hot-bath is recommended for the relief of pain and shock.

A. Former Local Treatment.—(a) First Degree Burn or Simple Erythema.—Apply sterile vaseline, or carron oil (*q.v.*), or boric acid, talcum, bismuth, alum, or sodium bicarbonate powder, or, for pain, one of the following cold solutions, viz., sodium bicarbonate, gr. v+ to the ounce; boric acid, gr. v+ to the ounce; aluminum subacetate, gr. x–xxv to the ounce; Goulard's lead lotion, about half strength; picric acid, 1 per cent. The lead solution or picric acid should not, however, be applied to a large surface, for fear of absorption.

(b) Second Degree Burn, Showing Blebs.—Puncture and evacuate the blebs, and apply sterile vaseline, or Squibb's compound alum powder, or finely powdered boric acid, or silver foil, or any of the above powders or lotions. Renew the dressing once or twice daily.

(c) Third Degree Burn, with Skin Destruction and Sloughing. Prolonged immersion in a hot bath may be employed at first. All destroyed tissue that is not firmly adherent should be removed and the wound treated antiseptically by means of powders or solutions. Bichloride, 1 : 2000, may be used in the presence of pus and a temperature. Balsam of Peru and castor oil, equal parts, is of service. It is often advantageous during the healing process, to alternate the application of finely powdered boric acid with boric ointment, 10 per cent., in sterile vaseline, employing the powder to suppress the exuberant granulations caused by the ointment. If flexor surfaces are involved, the parts should be kept extended to prevent flexion deformity. Thiersch grafts may be later required. Early passive and active motion should be resorted to.

B. Newer Local Treatment. — Puncture and evacuate all large blisters, cleanse the wound with a mild antiseptic solution, and dry thoroughly by means of hot pads of sterile gauze or lint, aided by gentle fanning. Then apply hot (135° to 145° F.) melted paraffin wax, such as the Stanolind Surgical Wax which is declared to be of the proper melting point, ductility, and plasticity. The melted wax is very gently " patted," not painted, on the wound with a fine, one or two inch, camel's-hair varnish brush, and is carried for half an inch or more over the surrounding healthy skin. After the first film is formed, paint on a fairly heavy coating of wax, and cover this with a snug dressing of gauze held in place by a bandage.

Redress the wound once daily until heal-

ing begins, then every third day. In removing the wax dressing, slit it through with sharp scissors, avoiding the denuded area, and after loosening it from the intact skin, roll it back and remove it from the wound, from which it is separated readily. At each dressing all easily detachable dead tissue should be removed, and the wound flooded with an antiseptic solution. Bleeding should be strictly avoided, and wiping of the wound, therefore, refrained from.

In preparing the wax, melt it in a perfectly dry, covered pot over a water bath (preferably a melted sodium acetate bath), the water being kept boiling until the wax is entirely melted and has reached a temperature of 135° to 145° F. No water should be be allowed to splash into the melted wax. (Frank R. Morton.)

C. Another new method of treating burns is by means of dichloramine-T, 2 per cent. (See Part 11), with paresine-net covering which should be laid on very smoothly and changed daily; all dead tissue to be removed gradually. Burns are best exposed to the air under a blanket or tent containing electric bulbs or other device to prevent irradiation of the body heat.

Paraffin mesh is prepared as follows: Ordinary large mesh (about $\frac{3}{16}$ inch) fly netting may be used, cut into 4x6 inch strips, and sterilized in linen wrappers. Paraffin melting at 45°C. (paresine, ambrine, paraffin wax) is sterilized over boiling water for at least one-half hour. One end of the netting is grasped with forceps and the netting dipped into the melted paraffin over a water bath. It is then suspended until it drips clear; or a rubber bulb syringe may be used to blow the meshes clear. The paraffin hardens when exposed to the air. The hardened strips should be placed in sterile wrappers.

Butterfly Disease.—(See Lupus Erythematosus.)

Callositas; Callus.—L., callosity, from *cal'lus*, insensibility. To remove callus, (1) soak the parts for half an hour in hot soapsuds or in hot water containing from one-half to one ounce to the gallon of sodium carbonate, bicarbonate or borate, or potassium carbonate, and then pare off the callus; or (2) dissolve the callus gradually by painting on cautiously every few minutes a 10 to 30 per cent. solution of caustic potash or pure lactic acid; or (3) soak the parts in warm oil, followed by the application of oil-soaked flannel during the night (Hyde and Montgomery); or (4) first pare off the callus, then apply for several days or a week a 10 to 25 per cent. salicylic acid rubber plaster or plaster-mull, or a 10 per cent. solution in flexible collodion or in ether to which a little fat is added, then soak the parts in hot water and peel or scrape off the softened mass. (Stelwagon.)

The modified papillary layer beneath the callus may be touched with the Paquelin cautery so as to destroy it. (Crocker.)

In intractable cases associated with hyperidrosis, the X-rays (*q.v.* in Part 1) should be cautiously applied daily until the hyperidrosis ceases and the callosity disappears.

In callosity of the nail matrix, split the nail or avulse it, and remove the callus.

Calvities.—L. baldness. See Alopecia,

Cancer of the Skin.—L. *can'cer*, crab. See Carcinoma Cutis.

Canities.—L. See Grayness of the Hair, under Hair Diseases.

Carbuncle.—L. *carbun'culus*, little coal. An acute inflammatory lesion of the skin, characterized by a circumscribed, flattened, brawny, indurated swelling, with multiple cribriform perforations exuding pus. It occurs usually on the nape of the neck or the upper part of the back.

Ill health from any cause and diabetes predispose to the disease. It is serious if not well treated.

Treatment.—One may insert into all the openings, carbolic acid crystals (Crocker), or solid caustic potash (Phillips). The latter is left in for about twenty-five minutes, or until cauterization is thorough, after which the cavities are syringed with a weak solution of acetic acid, to neutralize the alkali, and a wet dressing of carbolic acid, 1 : 40, or 2½ per cent. applied (from Pusey). This method of treatment is well praised.

In the early or spreading stage, one may inject pure carbolic acid (said to be less dangerous than the solution) subcutaneously all around the carbuncle, in order to check its extension, and apply hot compresses wet with a 1 : 30 solution over it. A cupping-glass or one of Bier's glasses may be used to draw out the pus and detritus, and crystals of carbolic acid may be pushed into all the openings, after syringing them out with the carbolic acid lotion. Ichthyol, pure or diluted with two or three parts of water, may be applied. Swabbing the cavities with a cotton-wound toothpick soaked in alcohol is efficacious, if persisted in.

As soon as softening occurs, a bold deep crucial incision should be made, and the ends of the incision carried well beyond the limits of the inflammation. The four skin-flaps are lifted up and separated from the underlying tissues, well beyond the area of

inflammation (Kanavel), all detachable necrotic tissue is removed with forceps, and the resulting cavity thoroughly irrigated with carbolic acid lotion, 1 : 40, and packed with hot moist gauze wet with boric acid solution, ℥v ad Oi, or with ichthyol. Redress the wound every day at first and later less often until healing occurs.

Ionic medication (*q.v.*) is recommended. A zinc positive needle is inserted into the openings, and a current of 20 to 30 milliampères employed for thirty minutes.

At the onset of the disease, the bowels should be opened with calomel and salines, and they should be kept active. Nourishing liquid food should be administered. Strychnine may be required. Quinine, gr. v–x, in capsule, every four hours, is recommended; also tincture ferri chloridi, ℥ss, well diluted, t.i.d.p.c. The elixir ferri, quininæ, et strychninæ phosphati, ℥i–ii, well diluted, t.i.d.p.c., is a useful tonic (for formulæ, etc., see Part 11). A carbohydrate-poor diet may prove curative.

Carcinoma Cutis; Epithelioma.—Gr. *καρκίνος* crab + *-ωμα* tumor; L. *cu'tis*, skin; *ἐπί* on + *θηλή* nipple. Cancer of the skin is either primary or metastatic. It begins as a small, superficial, indurated plaque or tubercle, or as a deep, hard, subcutaneous tubercle, which soon develops into a firm, yellowish or pinkish, waxy, nodular growth, with dilated blood vessels on the surface. When the lesion ulcerates, its borders present the same nodular, hard, waxy, yellowish to pinkish appearance, while the base is nodular and red, and there is a tendency to free bleeding. The so-called rodent ulcer is a superficial form of epithelioma in which ulceration predominates, the border is little, if at all elevated, and there is practically no tendency to metastasis.

Etiology.—Advanced age; heredity; traumatism; chronic irritation; the actinic light rays; chronic X-ray burns; irritation caused by soot, dirt, paraffin, coal-tar, silver nitrate; chronic lesions, *e.g.*, senile seborrhœic spots or keratoses, burns, ulcers, scars, warts, moles, callosities, horns, nævi, lupus vulgaris, syphilis, lupus erythematosus, psoriasis, arsenical keratosis, leucoplakia, blastomycosis, etc.

Prognosis.—Early treatment of superficial epithelioma is almost invariably permanently successful, and even the deep-seated forms may be cured if not of too long standing. Glandular involvement, of course, renders the prognosis more serious.

Treatment.—Mucous membrane epitheliomata and all epitheliomata with glandular involvement should be removed, together with their glandular connections, by a wide and deep excision, followed by the use of the X-rays or radium (*q.v.*). Cutaneous epitheliomata without glandular involvement may be destroyed by means of the X-rays or radium; but excision followed by radiation is considered the ideal treatment, where feasible. The parts should be covered by a thin lead-foil, at least one-fiftieth of an inch in thickness, with a hole large enough to expose the growth to the X-rays for at least one-half an inch beyond its border, or wider than this, in order to include the lymphatic distribution of the affected parts.

Haldin Davis says: "A good plan is to give a pastille dose once a week for three weeks and then to wait for three weeks to observe the result"; but, "in cases where there is a rapid extension of ulceration it is legitimate to give much larger doses than this." Following the first exposure, a filter should be used. A preliminary curettage may be desirable. After healing has occurred, continue the treatment every several weeks, using filters and a harder tube, in order to reach the deeper tissues. (Knox.)

Radium is effective. The salt may be spread upon a flat metal plate and covered with a layer of varnish to protect it against organic fluids. The plate is fastened in place by adhesive plaster. Full strength doses are applied without a screen for from one to one and a half hours. "The full therapeutic effect of a dose is not seen until six weeks after its administration." Several applications are sometimes required (Haldin Davis).

Knox has obtained excellent results, using two small tubes of platinum about 2 cm. long by 2 mm. broad, each containing 30 mgrms. of radium bromide, the thickness of the wall of each tube being ⅓ mm., these tubes being placed side by side and an additional filter of ½ mm. of lead usually used. "The exposures varied from one to four hours to any particular area, and when a large growth or ulcer was treated, it was divided into areas each receiving the same dose." But variable amounts of radium, periods of exposure, and repetitions of treatment are required in different cases.

In treating the eyelid, the eyeball should be protected by means of a sheet of lead, rubber, or lead enclosed in gutta-percha tissue, and moulded to the surface of the eyeball under the lid to be treated.

Beads and nodules of growth and even ulcers may be destroyed by firm pressure for

about forty seconds with a pencil of carbon-dioxide snow. The resulting crust separates within two weeks.

Perhaps next in value to radiotherapy in the eradication of skin cancers which show no glandular involvement is the treatment by caustics:

℞ Farinæ tritici (wheat flour),
Amyli, aa ..... ʒi
Acidi arsenosi pulveris ..... gr. viii
Hydrargyri sulphidi rubri ..... ℈ii
Ammonii chloridi ..... ℈ii
Hydrargyri bichloridi corrosivi .... gr. iv
Zinci chloridi crystallisati ..... ʒi
Aquæ fervidæ ..... ʒiss
(Bougard's paste.)

Separately powder the first six ingredients and then mix together. Dissolve the zinc chloride in the boiling water, to which may be added eucaine, 5 to 10 per cent. Add this solution slowly to the powder mixture and stir constantly to prevent lumpiness. "The resulting paste is firm and rather stiff." It may be kept indefinitely in a closed jar.

℞ Acaciæ pulveris 1.0
Acidi arsenosi pulveris 2.0

or

℞ Acaciæ pulveris,
Acidi arsenosi pulveris, aa 1.0
Talci 10.0

Mix and add, at the time of using, enough water to make a thick, firm paste, of the consistency of stiff butter (Marsden's Paste). Ten to twenty per cent. of cocaine or eucaine may be added, if desired.

First thoroughly remove with the curette, under anæsthesia, all friable epitheliomatous tissue; or, if the epidermis is unbroken, remove the latter with a solution of caustic potash of syrupy consistency applied on a glass rod or cotton swab. Then apply the paste thickly over an area no larger than a square inch. On each successive day an additional square inch may be covered until the whole affected surface and a little beyond is covered. Leave the paste on for from eight to twenty-four hours, or until a white eschar is produced. If any part of the tumor remains undestroyed after the removal of the paste, reapply it immediately. After removing the paste treat the resulting wound aseptically until healing occurs. The caustic application produces considerable inflammatory reaction and swelling, but this is desirable for the purpose of destroying outlying cancerous radicles not actually reached by the caustic (chiefly from Pusey).

Sherwell says the present most popular caustic is liquor hydrargyri nitratis; prolonged application under local (see cocaine in Part 11) or general anæsthesia, following thorough curettage.

As a further assurance one may ionize the parts (see Ionic Medication). Use a 2 per cent. solution of zinc chloride or 10 per cent. zinc sulphate and a solid zinc positive electrode and a current of 2 to 3 milliampères per square centimetre for ten to twenty minutes every two weeks.

Inoperable and metastatic carcinoma may be treated by the X-ray, radium, and arsenic (*q.v.*) internally in increasing dosage. The latter is reported to have cured cases Growths apparently inoperable may sometimes be rendered operable by radiotherapy.

Cataphoresis.—Gr. κατά across + φόρησις bearing. See Ionic Medication in Part 1.

Caterpillar Sting.—See Bites.

Chafing.—See Intertrigo.

Chancre.—Fr. See Syphilis in Part 1.

Chancroid.—Fr. *chancre* + Gr. εἶδος form. See Part 2 or Part 3.

Chapping.—

℞ Tincturæ benzoini ..... ʒss
Glycerini ..... ʒiiss
Aquæ destillatæ ..... ʒv

Cheilitis Exfoliativa.—Gr. χεῖλος lip + -ιτις inflammation; L. *ex*, out + *fólium*, leaf. See Dermatitis Seborrhœica.

Cheilitis Glandularis.—Gr. χεῖλος lip + -ιτις inflammation; L. *glans*, a cord. A rare chronic inflammation of the mucous glands of the lower or both lips, characterized by pinhead or larger sized dilatation of the mucous glands and dilatation of the openings, which discharge a mucous or mucopurulent secretion.

The disease is rebellious to treatment. Stelwagon says: "Volkmann (who first described the disease) cured three of his cases in one to two months with potassium iodide internally, gargles of potassium chlorate, and mild cauterization of the parts with silver nitrate." See Part 11.

Cheloid.—See Keloid.

Chicken Pox.—See Varicella in Part 1.

Chignon.—See under Hair Diseases.

Chigo, or Chigre, or Sand Flea.—See Bites.

Chilblain; Pernio; Erythema Pernio.—L. *pérnio*, chilblain; L.; Gr. ἐρύθημα redness. A bright or dusky red erythema associated with intense itching, occurring on the tenuous parts of the body, such as the heels and borders of the feet, the fingers, ears, and nose, and due to exposure to cold and damp. The immediate cause is possibly a passive vascular dilatation due to paralysis of the vaso-constrictors. The wearing of rubber

boots is a predisposing cause, as is also poor health.

Treatment.—The following local applications are recommended for the relief of itching and burning:

℞	Calaminæ	gr. xl
	Zinci oxidi	gr. lxxx
	Acidi borici	ʒi
	Glycerini	♏ii–viii
	Acidi carbolici	♏x–xxx–lx
	Liquoris calcis	ʒi
	Aquæ, q.s., ad	ʒiv
		(Calamine lotion.)

℞	Mentholis	gr. ii
	Acidi borici pulveris	gr. xlviii
	Petrolati	ʒi

Immersion in cold water and rubbing with snow or ice is effectual.

Later, when the symptoms are less acute, one may rub on every night or every two or three days, one of the following stimulating preparations, viz., tincture of iodine, pure or diluted with alcohol; vasogen iodine (*q.v.* in Part 11), or unguentum iodi (*q.v.*); unguentum ichthyolis, 10 per cent.; menthol, 2 per cent. in alcohol; linimentum saponis (*q.v.*) ℞ Ammonii chloridi, ʒiv, acidi hydrochlorici diluti, ʒi, spiritus vini rectificati, ʒiss, aquam destillatam ad ʒiv (R. A. Bolam); flexible collodion, several coatings; tincture iodi, ʒi, in flexible collodion, ʒi; ℞ Collodii, ʒi, olei ricini, ♏xx, olei terebinthinæ, ʒi (Stelwagon); ichthyol collodion, 10 per cent. Hot salt baths are also beneficial. If cracks or ulcers are present apply a very bland ointment, such as cold cream or boric ointment.

Electricity is also recommended. The galvanic current may be applied for ten minutes three times a day, or three or four times weekly, the positive pole being applied to the affected parts, with the negative pole near the truncal nerve; a current of two or three milliampères is sufficient. Some recommend a strong faradic current for ten minutes three times a day; some an electric bath for ten to fifteen minutes daily, given, as Pusey quotes, "by placing an electrode from a static machine or induction coil in a foot bath, the other on the patient's body and then passing a current not strong enough to be disagreeable."

Crocker recommends nitroglycerine. Wright recommends calcium chloride, gr. x-xx, t.i.d., to increase an alleged deficiency in the coagulability of the blood; but Bolam says the calcium salts are "often disappointing in their action."

Prophylaxis.—The hands or feet should be washed daily in very hot water, and quickly and carefully dried with a soft linen towel They should be protected with warm, dry, woolen gloves and stockings, and thick, loose shoes. Active exercise and good hygiene are to be enjoined, *e.g.*, adequate rest of mind and body, fresh air day and night, a daily warm bath in a warm room before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, rest before and after meals, nutritious food, and regulation of the bowels. Tonics, such as Fowler's solution, the elixir ferri, quininæ, et strychninæ phosphati, and codliver oil may be indicated (see Part 11).

Treatment of Prolonged Exposure to Severe Cold.—Place the patient in an unheated room, and rub the body with cold wet cloths. Then place him in a bath at 60.8° to 64.4° F., and gradually raise the temperature of the bath to 86° F. in two or three hours. Give ether or camphor hypodermically, and give whiskey or brandy as soon as the patient can swallow (Part 11).

Where the extremities alone are affected, wrap them in cold, wet cloths, and suspend them to relieve the pain.

Second and third degree frost-bite should be treated the same as burns (*q.v.*), after the normal temperature has first been gradually restored.

Chloasma.—Gr. χλοάζειν to be green. Diffuse or patchy, yellowish, brownish, or blackish pigmentation of the skin (so-called "liver spots").

Causes of Pigmentation or Discoloration of the Skin in General.—Utero-ovarian disturbances; pregnancy; anæmia; chronic indigestion; chronic gastric ulcer; chronic gastrectasia; sluggish liver and constipation; hepatic cirrhosis; anæmia; cachexia; neurasthenia; nervous shock; chronic heart disease; arteriosclerosis; syphilis; tuberculosis (abdominal); malaria; Addison's disease; ochronosis; arthritis deformans; pellagra; leprosy; hemochromatosis; exophthalmic goitre; innumerable black comedones on the face; local traumatism or irritation, due to irritating drugs, sinapisms, the sun's rays, X-rays, heat, great cold, scratching, pressure or friction; abdominal neoplasms; melanotic cancer; sarcoma; arsenic; varicose veins of the legs; pediculosis corporis (vagabond pigmentation); xeroderma pigmentosum; dermatitis herpetiformis; urticaria; urticaria pigmentosa; chronic eczema; erythema exudativum; lichen planus; tinea versicolor; erythrasma; Pinta disease; senile atrophy of the skin; scleroderma; fibroma; psoriasis; the demodex folliculorum; argyria.

Pregnancy and utero-ovarian disease are the commonest causes of chloasma.

Treatment of Chloasma.—The underlying cause must, of course, be removed, if possible. One of the following peeling lotions or pastes may be employed. The weaker strengths should first be employed tentatively until a branny desquamation or active irritation supervenes, after which cold cream may be applied for a day or two, and active treatment again resumed, if necessary:

℞ Hydrargyri chloridi corrosivi gr. iv–viii
Tincturæ benzoini ..... ℥ii
Zinci sulphatis ..... gr. xx–xl
Alcoholis,
Aquæ, aa, q.s., ad ..... ℥iv
M. Sig.—Apply freely and often, as directed.

℞ Acidi lactici 1.0
Aquæ 5.0–20.0
M. Sig.—Apply freely and often, as directed.

℞ Acidi salicylici ..... gr. xlviii–℥ii
Resorcinolis ..... gr. xxiv–xcvi
Adipis benzoinati ..... ℥i
M. Sig.—Apply as directed.

As long as the underlying cause persists, recurrences are to be expected.

Chromidrosis.—Gr. *χρῶμα* color + *ἱδρώς* sweat. Colored sweat and sebum are most common on the face. Chronic constipation, the neurotic temperament, and uterine disorders are cited as causes. Green or bluish sweat may be caused by the ingestion, inhalation, or cutaneous absorption of copper; pink sweat by potassium iodide; blue sweat by iron. Red, yellow, and blue sweat may be caused by the action of bacteria upon the sweat after its excretion (pseudo-chromidrosis). The latter occurs in the axillæ. One must bear in mind the possibility of malingering.

Treatment.—Attend to any possible cause. Try alcohol, chloroform, ether, or glycerine for removing the discoloration. Employ cleanliness and local antiseptics (bichloride, 1:1000, alcohol, chloroform, ether, vinegar) for pseudochromidrosis.

Cicatricial Alopecia.—L. *cica'trix*, scar; Gr. *ἀλώπηξ* fox. See Folliculitis Decalvans.

Cicatrix.—L. scar. The treatment is the same as that of Keloid, *q.v.*

Clavus.—L. *cla'vus*, nail. See Corn.

Coccidial Granuloma.—L. *coccid'ium;* dim. of Gr. *κόκκος* grain; L. *granulum*, grain + Gr. *-ωμα* tumor. A granulomatous skin disease, resembling blastomycosis, due to a sporozoan protozoon, the coccidioides immitis. It has been observed especially in California.

Cold, Exposure to.—See under Chilblain.

Cold Sore.—See Herpes Simplex.

Colloid Degeneration of the Skin; Colloid Milium.—Gr. *κόλλα* glue + *εἶδος* form; L. *mil'ium*, millet-seed. A very rare disease, affecting chiefly the upper two-thirds of the face, and characterized by pinhead to small pea-sized, glistening, translucent, lemon yellow, flattened papules, deeply embedded in the skin, from which, when punctured, a little gelatinous material or a droplet of blood may be expressed.

Treatment.—The nodules may be removed by electrolysis (see Adenoma Sebaceum) or the curette.

Comedo or Blackhead.—See Acne Vulgaris.

Condyloma.—Gr. *κόνδυλος* knuckle + *-ωμα* tumor: wart. See Verruca.

Congenital Leucoderma.—L. *con*, with + *ge'nitus*, born. See Albinism.

Pemphigus.—See Epidermolysis Bullosa.

Corn; Clavus.—L. *clav'us*, nail. After softening the corn by soaking the foot in hot soap-suds, or even without such preparation, pare down the callosity with a sharp scalpel, and carefully dissect out the core without causing bleeding. The resulting cavity may be carefully touched with a droplet of caustic potash solution, gr. xxiv ad ℥i, and the latter's action almost immediately neutralized with dilute acetic acid or vinegar. Thereafter, a perforated felt protector with an adhesive side should be worn for some time, and the feet should be cleansed daily. Instead of the above treatment, one may employ a keratolytic agent:

℞ Acidi salicylici ..... gr. xxx–xl
Extracti cannabis indicæ ..... gr. x
Collodii flexilis ..... ℥ss

℞ Acidi salicylici ..... ℥ss
Extracti opii ..... ℥ss
Cerati simplicis, q.s., ad ..... ℥ss

Apply one of the above preparations only to the corn, and reapply as often as it wears off. After several days, soak the foot in hot water and scrape the corn away.

Hyde and Montgomery recommend that both the corn and adjacent skin be covered with narrow, short, smoothly applied strips of adhesive plaster, or that Burgundy pitch be melted and painted over the surface.

Ionization (*q.v.*) with zinc is also recommended. The hard skin is first removed by means of pumice stone; then the corn or callus is soaked for several hours under a compress wet with zinc chloride solution, 1 per cent.; then a current of 2 to 3 milliampères per square centimetre is applied for thirty minutes.

For soft corns, which usually occur between the toes, one must employ, beside the above measures, daily bathing of the feet, followed by the application of a bland powder and the insertion of wool between the toes. Spirits of camphor may be painted on at night.

Properly fitting shoes should be worn.

Cornu Cutaneum.—L. *co'rnu*, horn; *cu'tis*, skin. See Horn, Cutaneous.

Cowpox.—See Vaccinia, in Part 1.

Crab-Lice.—See Pediculosis Pubis.

Cracked Lips.—See under Eczema.

Craw-Craw.—A disease of doubtful identity, occurring chiefly on the west coast of Africa, and characterized, according to Emily, by small, reddish-brown, itching macules, which develop into excavated itching ulcers.

Treatment.—The skin surrounding the ulcers should be shaved, and bathed with hot water and soap, followed by bichloride solution. All crusts and soft tissue should be scraped from the ulcers, the latter irrigated and dried and boric acid powder applied freely, followed by boric ointment, 10 per cent. (Emily). The disease is said to be rebellious to treatment.

Creeping Eruption.—A very rare disease (excepting in southeastern Russia), caused by the minute, migrating larva of the horse bot-fly, which traverses the skin, producing an irregular, slightly raised line, that is at first reddish and later becomes vesicular and crusted. The larva is one-quarter of an inch or more in advance of the moving end of the line.

Treatment.—Excision extending one-half an inch beyond the advancing part may be performed. Stelwagon cured his cases in a week by applying "cataphoretically (*q.v.*) to an inch and a half area around the advancing end of the burrow a solution of mercuric chloride, gr. ii to the ounce, and a minute quantity of nitric acid to the suspected site of the parasite, just beyond the extreme end of the line." "A magnifying glass should be employed to discover this point, as it is slightly in advance of where it appears to be by unaided vision." The cataphoretic applications were repeated two to four times.

Kirby-Smith, who has seen many cases, gets uniformly good results by cutting the skin over the furrows with a bistoury, then applying equal parts of tincture of iodine and phenol.

Cystic Epithelioma, Multiple, Benign.—See Epithelioma, Multiple, Benign, Cystic.

Dandruff.—See Alopecia Seborrhœica.

Decubitus.—L., a lying down. See Bed Sore, in Part 1.

Delhi Sore.—See Oriental Sore.

Dermatalgia.—Gr. *δέρμα* skin + *ἄλγος* pain. See Neuralgia of the Skin.

Dermatitis Exfoliativa.—Gr. *δέρμα* skin + *ιτις* inflammation; L. ex, out + *fol'ium*, leaf. A rare inflammatory disease, involving usually the whole surface of the body, and characterized by diffuse redness with abundant, flaky desquamation. (See also the following two diseases.)

Etiology.—Eczema; psoriasis; lichen planus; pityriasis rubra pilaris; local irritation caused by mercury, chrysarobin, iodoform, arnica, etc.; possibly rheumatism, gout, tuberculosis, alcoholism, cold, quinine, or some form of toxæmia.

Prognosis.—Those cases with no constitutional involvement usually recover in several weeks or months; but relapses may occur. Some cases persist throughout life (Pityriasis Rubra of Hebra).

Treatment.—Put the patient to bed in a warm, well-ventilated room, on an abundant, easily digestible, well-balanced ration. Sabouraud advises superalimentation as in tuberculosis (see Part 1). Codliver oil may be prescribed, if deemed desirable and also iron or arsenic (see Part 11). The bowels should be cleared out, and an abundance of water and diuretics prescribed, *e.g.*, potassium bicarbonate, gr. xx, in a glassful of water, every four hours.

All that is required locally is a bland, oily application:

℞ Calaminæ,
Zinci oxidi, aa..... ℥ii
Liquoris calcis,
Olei olivæ, aa..... ℥ii
(Calamine liniment.)

℞ Liquoris calcis,
Olei olivæ seu lini, aa.
(Carron oil.)

℞ Olei olivæ,
Petrolati mollis, aa.

Dermatitis Exfoliativa Epidemica.—Gr. *δέρμα* skin + *-ιτις* inflammation; L. *ex*, out + *fol'ium*, leaf; Gr. *ἐπί* on + *δῆμος* people. A rare, contagious, usually general, exfoliative dermatitis, running an acute course of six to eight weeks, with a mortality of ten to twenty per cent.

Treatment.—Apply the bland oily preparations recommended in dermatitis exfoliativa (above). The constitutional treatment is supportive and symptomatic. In a few cases in which the disease began as a small patch, Crocker has aborted it by painting with tincture of iodine or collodion.

1. — *Antipyrin rash.*
N° 1785. Dr Fournier.

2. — *Cutaneous iodism.*
N° 2343. Dr Hallopeau

3. — *Bromo-iodine eruption.*
N° 2093. Dr du Castel.

4. — *Polymorphous erythema.*
N° 2212. Dr Balzer.

St. Louis Hospital Museum, Paris.

Medicinal rashes : Polymorphous erythema.

Dermatitis Exfoliativa Neonatorum.—Gr. δέρμα skin + -ιτις inflammation; L. ex, out + *fo'lium*, leaf; Gr. νέος new + L. *na'tus*, born. A rare, general exfoliative dermatitis of infants, running a course of one to three months, with a mortality of about 50 per cent.

Treatment.—Anoint the child with a bland oil, to which may be added boric acid or ichthyol, gr. iiss–v to the ounce, and wrap it in cotton to maintain the body heat. The crusts at the corners of the mouth should be softened with almond or olive oil and gently removed, so that the child can nurse without great discomfort.

Dermatitis Gangrænosa.—See Gangrene of the Skin.

Infantum.—See Ecthyma Gangrænosum.

Herpetiformis.—Gr. δέρμα skin + ιτις inflammation; Gr. ἕρπειν to creep; herpetic means the occurrence of small vesicles in clusters. A rare, chronic, relapsing, multiform, inflammatory disease, characterized by a grouped, erythæmatous, papular, vesicular, pustular, bullous, or mixed eruption, accompanied usually by intense itching, and with resulting pigmentation. The disease may last, with exacerbations and remissions or intermissions, for months or years, and then finally disappear. Most cases get well in a few weeks to a few months, but recurrence is almost certain. The pregnancy cases (Herpes Gestationis) offer the most favorable prognosis.

Etiology.—Nervous and physical stress or breakdown; pregnancy; phimosis; glycosuria; albuminuria; exposure to cold; septicæmia; vaccine; drugs.

Treatment.—An endeavor should be made to ascertain the real cause. In the meantime a correct hygienic regimen should be instituted, *e.g.*, physical and mental rest, fresh air day and night, but the avoidance of cold, regular hours of eating and sleeping, a plain and easily digestible but generous diet, the avoidance of tea, coffee, alcohol, and tobacco, and free bowel activity. Such tonics or alteratives as arsenic, strychnine, quinine, and codliver oil are well recommended, particularly arsenic. Crocker recommends salicin, beginning with gr. xv, well diluted, t.i.d. and increasing rapidly up to gr. xxv and xxx t.i.d.; and he adds, "if the bowels are kept open there is rarely headache or other disagreeable symptoms." Alkalies and diuretics, such as potassium acetate or citrate may possibly be of service. Potassium iodide should not be given. A milk diet and eliminative treatment may be effectual in pregnancy. See Part 11 for Drugs.

For the relief of itching and burning, are recommended phenacetin, antipyrine, acetanilid, bromides, belladonna, and saline cathartics. For the same purpose the vesicles should be punctured and the following soothing and healing lotions employed:

℞	Calaminæ	gr. xl
	Zinci oxidi	gr. lxxx
	Acidi borici	ʒi
	Glycerini	♏ii–viii
	Acidi carbolici	♏viii–xxx
	Liquoris calcis	ʒi
	Aquæ, q.s., ad	ʒiv
		(Calamine lotion.)
℞	Thymolis	gr. iv–viii
	Glycerini	ʒi
	Alcoholis	ʒi
	Liquoris potassæ	ʒss
	Aquæ, q.s., ad	ʒiv
℞	Camphor-chlorali,	
	Acidi carbolici, aa	gr. xx–lvii
	Mentholis	gr. xx–xl
	Extracti hamamelidis destillati,	
	Alcoholis, aa	ʒii

Also (Stelwagon), acidi carbolici, ʒi–iii, in a saturated solution of boric acid (ʒv), Oi; liquoris carbonis detergens, 1 to 2 teaspoonfuls or more in a teacupful of water; liquoris picis alkalinus, ʒi–iii to the pint of water, applied cautiously; ichthyol, 2 to 10 per cent. aqueous solution; resorcin, 1 to 5 per cent. aqueous solution.

These lotions may be supplemented with bland dusting powders and mild ointments, *e.g.*, cold cream, zinc oxide ointment (*q.v.*), vaseline containing carbolic acid, gr. vi, or menthol, gr. i–x, to the ounce. For vesicobullous and pustular lesions in particular, it is recommended that sulphur ointment, gr. x–xxx (-ʒi–ii cautiously) to the ounce, be rubbed in vigorously. Indeed rest, arsenic, and sulphur are recommended as a triad.

Sulphur or alkaline and bran baths give great relief, especially at night: (1) potassium sulphide, ʒii–iv to thirty gallons of water; (2) lime, ʒss, sublimed sulphur, ʒi, distilled water, ʒx, boiled down to six ounces and filtered,—ʒii–iv to thirty gallons of water; (3) sodium bicarbonate, ʒii–x, bran, one gallon, to thirty gallons of water.

Dermatitis Medicamentosa; Drug Eruptions.—Gr. δέρμα skin + -ιτις inflammation; L. *medicamen'tum*, drug; L. *erup'tio*, a breaking out. Withdrawal of the drug is, of course, the first step. Copious water drinking and alkaline diuretics, together with laxatives or cathartics, hasten the elimination of the drug. In grave cases supporting treatment may be required.

It is said that sodium iodide gives rise to skin trouble less frequently than the potassium salt. The appearance of an eruption when using iodides, bromides, etc., is said to be inhibited if Fowler's solution (*q.v.* in Part 11) and potassium bitartrate (*q.v.*) are administered at the same time and an occasional laxative is given.

Dermatitis Papillaris Capillitii; Acne Keloid.—Gr. δέρμα skin + -ιτις inflammation; L. *papil'la*, nipple; *capil'lus*, hair; Gr. ἀκνή point; κηλίς scar + εἶδος form. An uncommon, chronic, pustular, sycosiform, cicatricial, cheloidal acne occurring on the nape of the neck, and very rebellious to treatment.

Treatment.—Thoroughly scrape away granulations and pustules, and epilate all diseased hairs; then disinfect the surface with pure carbolic acid neutralized with alcohol. The following ointment may then be applied:

℞	Sulphuris præcipitati	ʒss–ii
	Ichthyolis	ʒi–ii
	Adipis benzoinati	ʒi

Hot boric acid solution, ʒiv ad Oi, or bichloride, 1 : 2000, may be used as a wash.

Röntgentherapy (*q.v.* in Part 1) is said to be the most satisfactory treatment.

In the tumor stage, excision may be considered.

Dermatitis Psoriasiformis Nodularis.—See Parapsoriasis.

Dermatitis Repens.—Gr. δέρμα skin + -ιτις inflammation; L. *re'pens* creeping. A rare, superficial, subepidermal, spreading, seropurulent inflammation, starting from an injury, usually upon the hand. The picture is that of a sharply defined, seropurulent undermining of the epidermis. The staphylococcus albus is the predominant organism found.

Treatment.—Cut away with scissors the undermined epidermis flush with the healthy skin, taking care to leave no concealed pockets. Then soak the extremity in a hot antiseptic solution, *e.g.*, bichloride, 1 : 1000, for about thirty to sixty minutes. Redress the wound antiseptically once or twice daily, each time removing thoroughly any freshly undermined epidermis. Balsam of Peru and castor-oil, equal parts, is a good antiseptic dressing. The disease is said to be very rebellious to treatment.

I have seen a number of cases answering to the description of dermatitis repens, and they all responded promptly to the above treatment.

Dermatitis Seborrhœica; Eczema Seborrhœicum.—Gr. δέρμα skin + -ιτις inflammation; ἐκζεῖν to boil out; L. *se'bum*, suet + Gr. ῥοία flow. An indolent, evidently contagious, slightly itching disease, occurring chiefly on the scalp, eyebrows, auricles, face, neck, sternal, interscapular, and genito-crural regions, axillæ, and umbilicus, and characterized by greasy, scaly patches, usually upon a slightly inflammatory base. The patches are often circinate. It is the commonest cause of baldness (see Alopecia Seborrhœica). It rarely involves the vermilion border of the lips (cheilitis exfoliativa).

Prognosis.—Upon the scalp and lips the disease is very difficult to eradicate, and tends to recur repeatedly. Upon other parts it is easily cured, but is apt to recur.

Treatment.—Seborrhœic dermatitis of the scalp is considered under Alopecia Seborrhœica (*q.v.*). For the non-hairy parts the treatment is as follows: cleanse the parts daily with tincture of green soap and hot water, and apply, preferably at night, the following ointment:

℞	Acidi salicylici	gr. x–xv
	Sulphuris præcipitati	gr. x–lx
	Pulveris amyli,	
	Pulveris zinci oxidi, aa	ʒiss
	Petrolati mollis	ʒiv

This may be washed off in the morning if desired, and lotio alba applied two or three times during the day:

℞	Zinci sulphatis,	
	Sulphuris,	
	Potassii sulphureti, aa	gr. v–xv
	Aquæ	ʒi

(Pusey.)

If any irritation is produced by this treatment, apply cold cream for a few days.

The X-rays (*q.v.*) may be employed for obstinate patches: exposures every several days or every week, of two to five minutes duration, with a soft to medium tube, at a distance of eight to ten inches. (Stelwagon.)

The lip affection is treated with the same sulphur and salicylic ointment. Stelwagon recommends for stubborn lip cases, the occasional application of silver nitrate or resorcin, 2 to 20 + per cent., or lactic acid, 10 to 20 + per cent., with mild ointments in the intervals.

In the "milk crust" of infants, first soften the crust for several days with sterile olive oil or vaseline, then remove the oil and crusts with castile soap and warm water, cut the hair short, and apply on linen or lint, resorcin, gr. xx, in vaseline, ʒi; if used on the face, resorcin, gr. v ad ʒi. (Kerley.)

Dermatitis Venenata.—Gr. δέρμα skin + -ιτις inflammation; L. *vene'num*, poison.

Under this heading are included all inflammatory skin diseases caused by (1) local chemical irritants, *e.g.*, mustard, arnica, cantharides, mercurials, iodine, iodoform, orthoform, benzene, kerosene, carbolic acid, turpentine, croton oil, arsenical dyestuffs, tar compounds, resorcin, alkalies, acids, strong soaps, sugars, flour, chromic acid and its salts, polishing material, pastes, tobacco, formaldehyde, chrysarobin, pyrogallol, metol, aniline, etc.; and (2) poisonous plants, *e.g.*, poison-ivy, poison-oak, poison sumac, poison dogwood, primrose, nettle, cowhage, smartweed, oleander, balm of Gilead, snow on the mountain, rue, etc.

The commonest cause, however, is poison ivy or poison oak, which produces an intensely itching, vesicular or vesicobullous eruption of the hands, face, and often the penis and scrotum, with sometimes much swelling.

Treatment of Ivy or Oak Poisoning.—According to Pfaff, the poisonous principle is a fixed oil, toxicodendrol, soluble in alcohol and precipitated by lead salts; and the following treatment, based upon this knowledge, is said to be at once effective: First scrub the affected skin with soap and hot water and a hand brush, and then bathe repeatedly with 95 per cent. alcohol in order completely to remove all the oil.

Lead and opium wash and potass. permang. sol. also have a good reputation.

Rhus toxicodendron (*q.v.*) is employed internally by the homeopaths with probable success.

Dermatitis, X-ray.—See X-ray Dermatitis.

Dermatolysis.—Gr. δέρμα skin + λύσις loosening. Loose, pendulous skin, of unknown etiology.

The treatment is excision.

Dhobie or Laundryman's Itch.—An itching, ringworm-like dermatitis of the genitocrural and axillary regions or the feet, occurring in tropical countries.

Treatment.—Tincture of iodine, chrysarobin ointment, 5 to 10 per cent., salicylic acid ointment, 10 per cent., ung. epicarin, 10 per cent., and bichloride lotion, ½ to 1 per cent., have been variously used; but Adamson says they may now be discarded for a cleanly and rapidly efficacious ointment which we owe to Dr. Arthur Whitfield, as follows:

℞	Acidi salicylici	gr. x–xv
	Acidi benzoici	gr. x–xv
	Olei coca-nucis	℥vi
	Petrolati mollis, q.s., ad	℥i

The underwear should be frequently changed and boiled, and thorough cleanliness practiced, both for prophylactic and curative purposes. The disease is readily cured.

Disinfection.—See Part 1, General Medicine and Surgery.

Dracontiasis.—Gr. δρακόντιον (little dragon) tapeworm. A tropical disease of India, Persia, Arabia, Africa, the West Indies and South America, caused by a nematode worm, the dracunculus medinensis or filaria medinensis, or Guinea worm. The embryos of this worm, being discharged into water, enter the bodies of the fresh-water cyclops, a minute crustacean, where they pass the larval state, and in which they enter the human stomach with the drinking water. Here they escape from the cyclops, the female becomes impregnated, wanders into the tissues, and finally reaches the skin, usually of the foot, "where it may be felt like a coil of soft string." The parasite may even possibly enter the body through the skin.

The mature worm is two to three feet or more in length, and one-tenth to one fifteenth of an inch in thickness. When the young embryos are ripe they are discharged through a vesicle in the skin, and the mother worm then dies.

Treatment.—Inject into the body of the worm, either through the opening in the skin or through the unruptured skin, a few drops of bichloride solution, 1 : 1000 (one minim contains gr. $\frac{1}{1000}$ of bichloride). This kills both the worm and its embryos, which may become absorbed; or the worm may be wound on a stick after one or two days. (Emily.)

Another plan is to open the burrow upon a grooved director, apply lint soaked in carbolic acid solution (1 : 40), and cover this with oiled silk, wool, and a tight bandage. This is changed every twenty-four hours, until in three or four days the worm comes away (Roth). Do not bandage a carbolic acid compress about a finger or toe, for fear of gangrene.

"Asafœtida in full doses (*q.v.* in Part 11), is said to kill the worm." (Osler.)

Prophylaxis.—Boil the drinking water; and avoid wading or bathing in infected waters.

Dracunculus Medinensis.—L. little dragon. See Dracontiasis.

Drug Eruptions.—See Dermatitis Medicamentosa.

Ecchymoses.—Gr. ἐκ out + χύμα a flow. See Purpura.

Ecthyma.—Gr. ἐκ out + θύειν to rush. Ecthyma is an ulcerative form of impetigo (*q.v.*). It is characterized by one or more

autoinoculable, superficial, crusted ulcers, with an inflammatory areola.

It occurs in the uncleanly and debilitated. The bites of lice and bed-bugs may favor the inoculation and spread of the disease.

Treatment.—This is the same as that of impetigo contagiosa. Frequent soap washings are necessary. Good hygiene should be enjoined. The disease is readily cured.

Ecthyma Gangrænosum.—Gr. ἐκ out + θύειν to rush; γάγγραινα mortification. **Synonym.**—Dermatitis gangrænosa infantum. A rare eruption of gangrenous lesions, occurring spontaneously, or supervening upon varicella or other pustular eruption, chiefly in debilitated children.

Treatment.—Carefully remove all loose sloughs, and apply gauze wet with hot boric acid solution, ℥v ad Oi, or ichthyol solution, 5 to 10 per cent., or liquor sodæ chlorinatæ (*q.v.*), or bichloride solution, 1:5000 to 1000; or apply ichthyol ointment, 10 per cent., or unguentum hydrargyri ammoniati, ℥ss ad ℥i.

Prescribe a concentrated, easily digestible diet, and stimulants when required. Quinine, sodium sulpho-carbolate, and sodium salicylate are recommended. See Drugs, Part 11.

The condition is serious, but most cases recover.

Eczema.—Gr. ἐκζεῖν to boil out. A common, acute, subacute or chronic, itching, catarrhal inflammation of the skin, of multiform and changing character (erythematous, papular, vesicular, pustular, squamous), with usually a sticky oozing or weeping, or a history of such, with more or less epidermic thickening, and a tendency to crust or scale formation.

Etiology.—(a) Constitutional Factors.—Habitual overeating, possibly proteinanaphylaxis, (*q.v.*) dyspepsia, constipation, lithæmia, obesity, defective kidney elimination, general debility, physical or mental overwork, shock, neurasthenia, hysteria, nerve injury, hypothyroidism, asthma, reflex irritation (dentition, adherent prepuce, movable kidney, uterine disturbances, etc., no doubt giving rise to nervous irritability and resulting impairment of the general bodily functions), tuberculosis, anæmia, nephritis, diabetes mellitus and insipidus, malaria, intestinal parasites.

(b) Local Factors.—Chemical and mechanical irritants, *e.g.*, sulphur, tar, chrysarobin, turpentine, mercurials, iodoform, iodine, benzine, mustard and other medicinal plasters, lime, paints, dyes, antiseptics, polishing materials, pastes, sugar, flour, tobacco, acids, alkalies, strong soap, the excessive use of water and soap, urine, fæces, decomposing sweat and sebum, parasites (pediculi, fleas, bed-bugs, etc., and the parasites of scabies, ringworm, etc.), scratching, friction and pressure, as of rough woolen underwear, cold, heat, sea air, winds, sunlight, varicose veins.

Prognosis.—"Eczema is always amenable to persevering, judicious treatment." (Stelwagon.)

Treatment.—Correct hygiene is of great importance. This embraces regular hours of eating and sleeping, a proper amount of rest and exercise, rest before and after meals, adequate dry clothing, a plain but nutritious diet, proper bowel activity, and the correction of any possible causal influence (*q.v.*, in its appropriate place). The following articles of food are interdicted, viz., pork in any form, salted meats, cooked-over meats, veal, "gamy" fowl, crabs, lobsters, fried foods, gravies, pastries and cakes, hot breads, hot griddle cakes, sweets and confections, syrups, soups, sauces, cheese, pickles, condiments, sweet potatoes, Irish potatoes, cabbage, fried eggplant, tomatoes, oatmeal, bananas, apples, tea, coffee, alcohol, and tobacco.

The diet should consist chiefly of bread and butter, milk, eggs, fresh, plainly cooked vegetables, cereals, fresh fish, chicken occasionally, with other meats no oftener than once or twice a week; but each patient may require an individual diet. The previous diet of the patient should be inquired into, in order to ascertain, if possible, whether any dietetic idiosyncrasy exists, bearing in mind the possibility of a special protein hypersensibility (see tests under Asthma, in Part 1). A glassful of hot water or Vichy should be drunk one hour before meals and also between meals. Sodium bicarbonate or potassium acetate or citrate, gr. x, t.i.d., may be added to the water.

In infancy, the diet of the mother or the baby requires special attention (see Infant Feeding, Part 1). In breast-fed infants, regulate the hours of nursing and the quantity at each nursing; correct constipation in the mother, and enjoin exercise; regulate the mother's diet if the milk is high in fat or proteid, and order exercise; prohibit beer, tea, and coffee; sodium bicarbonate, gr. ii, in water, ℥ii, may be given before each nursing; if the urine is highly acid, give potassium citrate, gr. ii, t.i.d. In bottle-fed infants, reduce experimentally first the sugar, then the fat, then the proteid, and note the effect upon the eczema. (Kerley.)

In older children with gouty or rheumatic antecedents, red meat and cane sugar, even in the smallest quantities, may produce eczema and cyclic vomiting. (Kerley.)

1. — Ecthyma.

N° 234. Dr Lailler.

2. — Seborrhœic eczema.

N° 2337. Dr du Castel.

N° 149. Dr Lailler.

3 and 4. — Eczema rubrum of both surfaces of the hand.

St. Louis Hospital Museum, Paris.

Following is a useful laxative prescription for adults:

℞ Sodii phosphatis..... ʒi
Acidi phosphorici diluti..... ʒv
Syrupi zingiberis..... ʒiss
Aquæ menthæ piperitæ, q.s., ad..... ʒvi
M. Sig.—A tablespoonful in a large glass of water one hour before meals. (Pusey.)

Says Crocker: "Speaking generally, in an acute case, seen early, saline aperients are good treatment at first, and later on tonics suited to the patient's special conditions; while in cases of long standing diuretics take a high place."

Local Treatment.—Crusts and scales should first be gently removed with forceps after softening for about one or two days, if necessary, with liquid paraffine or vaseline, almond oil, olive-oil, or cottonseed oil, applied on strips of flannel or lint. The use of plain water and of soap should be avoided, except, perhaps, in chronic, sluggish cases. After the affected surface has been rendered clean, the remedial application is made. For itching, carbolic acid is added to the latter, ʒss–ii to the pint of lotion, and gr. ii–xxx to the ounce of ointment (Stelwagon). If this affords no relief, one may apply very hot water containing sodium bicarbonate, ½ teasp. to the pint.

In all cases of eczema, whether acute or chronic, with or without infiltration or epidermic thickening, one should begin with the mild, soothing remedies appropriate for the acute type, in order to test the sensitiveness of the skin, stimulating applications being later employed only if required. This rule is all important. (Stelwagon.)

Below are given by classes, in the order of their strength or stimulating properties, the remedies employed. The mild applications are used in all acute or actively inflammatory cases, whether any epidermic thickening is present or not. After the inflammation has subsided, stronger applications may be cautiously employed for the purpose of removing any remaining infiltration. For the thickly indurated patches, very strong stimulating applications are usually required.

Class I.—Mild, soothing remedies.

℞ Lotionis nigræ,
Aquæ calcis, aa.
(Up to full strength of black wash.)

℞ Calaminæ,
Zinci oxidi, aa..... ʒii–iv
Acidi borici..... ʒii
Glycerini..... ♏x–xxx
Acidi carbolici..... gr. xv–ʒi
Liquoris calcis..... ʒii
Aquæ, q.s., ad..... ʒviii
(Calamine lotion.)

℞ Liquoris carbonis detergentis... ʒss–viii
Aquæ, q.s., ad..... ʒviii

℞ Ichthyolis..... ʒss–iii
Aquæ, q.s., ad..... ʒviii

℞ Acidi borici..... ʒiiss
Aquæ fervidæ..... ʒviii

Any one of the above lotions should be dabbed on freely, three or more times daily, after first wiping off the parts gently with soft linen or cotton The lotion may be allowed partly to dry, and then zinc oxide ointment or cold cream may be applied upon lint or linen (Stelwagon), or the following powder dusted on:

℞ Pulveris acidi borici..... gr. xxx
Talci,
Zinci oxidi, aa..... ʒss
(Stelwagon.)

The powder is particularly useful in eczematous intertrigo.

℞ Acidi carbolici seu resorcinolis. gr. viii–xvi
Olei amygdalæ dulcis,
Liquoris calcis, aa..... ʒiv
(Useful in acute scalp cases.)

℞ Calaminæ,
Zinci oxidi, aa..... ʒiv
Liquoris calcis,
Olei olivæ, aa..... ʒiv
Acidi carbolici..... gr. xx–xl
Adipis lanæ hydrosi..... ʒi

℞ Calaminæ,
Zinci oxidi, aa..... gr. xl
Amyli..... ʒi
Acidi salicylici..... gr. iii–x
Acidi carbolici..... gr. iii–xxx
Petrolati mollis, q.s., ad..... ʒi

Haldin Davis recommends the following as the best for infantile eczema:

℞ Zinci oxidi..... ʒii
Amyli..... ʒii
Petrolati mollis..... ʒiv
M. Sig.—Spread on a mask of butter muslin. Enclose the arms in cardboard splints to prevent scratching. Change once or twice a day in weeping cases, otherwise once in forty-eight hours.

℞ Zinci oxidi..... ʒi
Adipis lanæ hydrosi..... ʒi
Liquoris calcis,
Olei olivæ, aa, q.s., ad..... ʒi
M. Sig.—Apply twice daily. Later when exudation ceases, add ichthyol, ʒss. (Haldin Davis.)

For pustular eczema are recommended the following two ointments:

℞ Hydrargyri ammoniati seu oxidi flavi..... gr. v–xx
Unguenti zinci oxidi seu aquæ rosæ..... ʒi

℞ Iodoformi..... gr. iii–x
Unguenti zinci oxidi..... ʒi

For eczema of the scalp and of the external auditory canal the following ointment is recommended. The auditory canal should also be syringed occasionally with a warm solution of boric acid and borax, aa℥ss to the pint:

℞ Resorcinolis..... gr. v–xx
Acidi salicylici..... gr. x–xx
Acidi carbolici..... gr. ii–x
Adipis lanæ hydrosi,
Petrolati mollis, aa..... ℥ss

In eczema of the scrotum, the latter should be supported as high as possible by a suspensory bag. In eczema of the genitalia and anus, an occasional cleansing with a hot solution of boric acid, ℥ii, and borax, ℥ss, to the pint, is necessary.

Class II.—Moderately stimulating remedies.

The stronger preparations of ichthyol and liquor carbonis detergens already mentioned, come in this class.

℞ Liquoris plumbi subacetatis.... ℥ss–i
Tincturæ picis liquidæ compositæ ℥ss–i
Aquæ, q.s., ad..... ℥viii
(Pusey.)

℞ Zinci oxidi..... ℥ii
Liquoris plumbi subacetatis diluti..... ℥vi
Glycerini..... ℥ii
Infusi picis liquidæ, q.s., ad.... ℥iv
(Stelwagon.)

℞ Olei cadini..... ℥i
Olei amygdalæ dulcis seu olei olivæ..... ℥iii–i
(Stelwagon.)

℞ Hydrargyri ammoniati..... gr. x–lxxx
Acidi carbolici..... gr. v–x
Unguenti zinci oxidi seu Ung. aquæ rosæ..... ℥i

℞ Picis liquidæ..... ♏x–xxx
Zinci oxidi..... ℥i
Unguenti aquæ rosæ, q.s., ad... ℥i

℞ Liquoris picis carbonis..... ℥i
Hydrargyri ammoniati..... gr. x
Petrolati mollis, q.s., ad..... ℥i
(Haldin Davis.)

℞ Chrysarobini..... gr. v–x
Picis liquidæ..... ♏x
Hydrargyri ammoniati..... gr. x
Adipis benzoinati, q.s., ad..... ℥i
(Hutchinson.)

℞ Ichthyolis..... gr. xivss
Zinci oxidi..... ℥i
Glycerini..... ℥iii
Gelatini..... ℥ii
Aquæ..... ℥vi

When needed, melt over a water bath (a double oatmeal boiler), and apply with a broad brush. Before the gelatine is dry, apply a thin gauze bandage. Keep this on for three to five days, then soften and remove it with hot water, and apply a fresh dressing (Stelwagon) Glycerine is said to be preferable to vaseline for most fissured lesions.

Silver nitrate, gr. v–xlviii to the ounce of water, or a saturated solution in spirits of nitrous ether, painted on every five to ten days, is sometimes useful in limited areas, in persistent lip cases, in eczema of the nails, and between the toes, and in fissures of the breast. The mouth should be opened widely while the lips are being painted. Tincture of benzoin, painted on every few hours, is also useful for lip and breast fissures, where bland ointments fail. Pusey says: "Where the fissures are deep and are constantly broken open by the movements of the mouth, they can be cured within a day or two by painting them with plain collodion, which should be renewed as soon as it loosens."

For the nails, employ unguentum acidi salicylici, gr. xx–l ad ℥i, with an occasional painting with silver nitrate in obstinate cases.

Class III.—Strongly stimulating remedies for circumscribed thickly indurated patches.

Rub in thoroughly twice daily, and allow to dry on, equal parts of sapo viridis, pix liquida, and alcohol. Continue this for several days or longer, if no irritation ensues, and then soak the parts in hot water containing one or two drams of borax to the quart, wash thoroughly with sapo viridis, rinse and dry. Continue this treatment until effectual, or until irritation is produced, when mild applications may be made (Stelwagon). A mild ointment such as diachylon ointment (*q.v.* in Part 11) may be applied thickly upon gauze after each cleansing.

A quicker method of removing thick layers of horny epidermis is by rubbing on liquor potassæ (*q.v.*) until punctate oozing occurs, when the potash is washed off with vinegar, and then boric acid solution, ℥iv ad Oi, and a mild ointment applied.

Salicylic acid plasters, 20 to 25 per cent., may be applied for several days for the same purpose.

One may scrub the hyperkeratotic patches with pumice after soaking in hot water containing salicylic acid, 10 per cent. Salicylic acid is a solvent of horny epidermis.

℞ Acidi salicylici..... gr. xx–lxxx
Adipis lanæ hydrosi.
Petrolati mollis, aa..... ℥ss

℞ Acidi salicylici..... gr. xv
Hydrargyri ammoniati..... gr. x
Liquoris picis carbonis..... ℥i
Petrolati mollis, q.s., ad..... ℥i
(Haldin Davis.)

Salicylic ointment is valuable for the dry, thickened plantar and palmar cases.

For intractable, sluggish, thickened cases, the X-rays (*q.v.*) may be employed. Haldin Davis uses "one-third to half a pastille dose for a series of three doses, with a rest of at least a week after each dose." Says Knox, "The first dose should be unfiltered with the tube fairly soft and a three to four inch spark-gap. A Sabouraud pastille should be colored to the B tint, its distance from the skin being the half distance of the skin from the anti-cathode. Later doses should be given through an aluminum screen of .5 mm. thickness, which allows of more frequent exposures and a harder ray being used when deeper than superficial effects are necessary. When the cure begins to progress, the action may be continued by a dose once in three weeks."

Eczema Seborrhœicum.—Gr. ἑκζεῖν to boil out. See Dermatitis Seborrhœica.

Elephantiasis.—Gr., elephant disease. Elephantiasis lymphangitica is here considered. There is also a lipomatous form.

Elephantiasis lymphangitica is a chronic endemic (tropical, parasitic) or sporadic (non-parasitic) disease, characterized by enormous enlargement and deformity of a member or region of the body, due to hypertrophy and hyperplasia of the skin and subcutaneous tissues resulting from a blocking of the lymphatic channels.

Etiology.—The immediate cause is obstruction of the lymphatics or veins. Remote causes, producing such obstruction, are the filaria sanguinis hominis of the tropics (see Filariasis), intrapelvic pressure, as in pregnancy, giving rise to phlegmasia alba dolens or "milk leg" (see Part 4), tumors, ulcerations, including varicose ulcers, chronic erysipelatous or eczematous inflammation, extensive operative removal of the inguinal glands, local traumatism, extensive disease of the inguinal glands and lymphatics due to gonorrhœa, syphilis, chancroid, lupus, etc., wearing of a double truss, frost-bite, chronic œdema due to thrombophlebitis (see Thrombosis, and Phlebitis, in Part 1), or to cardiac insufficiency, congenital occlusion of the lymph channels.

There is a congenital or inherited form (elephantiasis telangiectodes) due, possibly, to overnutrition resulting from excessive vascularity.

Treatment.—During febrile attacks (lymphangitis or elephantoid fever, following which the enlargement increases), administer saline aperients and quinine (see Part 11), and, if there is anæmia, iron. Locally, apply on lint, and change once to thrice daily, ichthyol ointment or aqueous solution, 25 per cent.; or bichloride solution, 1 : 4000 to 1 : 2000. If there is much pain, fomentations of lead water and laudanum (*q.v.*) may be employed.

To open any turgid lymphatics incurs the risk of infection and lymphorrhœa. If the disease is of the parasitic variety, the patient should be removed to a non-infected locality.

In the intervals between acute exacerbations, prescribe a generous diet, codliver oil, and tonics, such as iron, arsenic, and quinine. Violent exercise and exposure to the sun should be avoided, since they are apt to excite elephantoid fever. The iodides, thymol, ichthyol, methylene blue, and gallic acid, may be tried experimentally. Thomas recommends calcium sulphide, gr. i, b.i.d.p.c., for one month, then gr. iss, and later, gr. ii. Fibrolysin is recommended. Alcohol should not be taken. Absolute cleanliness is important. See Part 11 for drug formulæ.

For offensive discharge, Stelwagon recommends a powder of europhen, one part, and boric acid, three parts; or where there is a hard, warty covering, europhen, one part, and salicylic acid, three parts.

Palliation is afforded by rest, elevation of the parts, and the careful, even, and firm application of a Martin india-rubber bandage by day, and a light, pervious bandage by night. Under this treatment, cases due to operative removal of the lymphatic glands may recover in several months. In vulval cases an ointment of ichthyol, 10 to 25 per cent., iodine (*q.v.*), or mercury (*q.v.*) may be smeared on the parts, and pressure applied by means of compresses and a T-bandage.

Under strict asepsis, one may remove wedge-shaped strips of skin and subcutaneous tissue from time to time. Adult filaria may be removed from the enlarged lymph glands.

The scrotal overgrowth may be satisfactorily removed with the knife. First drain the parts of blood for some hours. Then apply an elastic bandage, and at the base a ligature, as the vascularity is very great. Then dissect out the penis and testicles by incisions along the dorsum of the penis and along the course of the cords, bearing in mind that hernia is apt to be present. Take away the whole of the affected skin to obviate recurrence.

The X-rays (*q.v.* in Part 1) may be of service.

Prophylaxis of the Filarial Variety.—Boil the drinking water, and guard against mosquitoes.

Elephantiasis Telangiectodes.—Gr. τέλος end + ἀγγεῖον vessel + ἔκτασις dilatation. See Elephantiasis, above.

Epidemic Dermatitis Exfoliativa.—See Dermatitis Exfoliativa Epidemica.

Erythema.—See Acrodynia.

Epidermolysis Bullosa.—Gr. ἐπιδερμίς skin + λύσις loosening; L. *bul'la*, large blister. A very rare, usually congenital and hereditary (sometimes acquired) condition of the skin, in which bullæ form from the slightest injury. The tendency usually begins in early infancy or childhood, and persists indefinitely.

There is no other treatment than the avoidance of pressure and friction.

Epithelioma.—See Carcinoma Cutis.

Adenoides Cysticum.—Gr. ἀδήν gland + εἶδος form. See Epithelioma, Multiple, Benign, Cystic.

Multiple, Benign, Cystic.—Gr. ἐπί on + θηλή nipple + -ωμα tumor; κύστις bladder. A very rare, usually hereditary disease, characterized by the presence, usually on the face, upper trunk, and arms of multiple, small, pinhead to pea-sized, smooth, glistening, translucent nodules or tubercles, of a pinkish, pearly, or pale yellowish color.

Malignant degeneration is possible.

Treatment.—Excision, curettage, electrolysis (see Adenoma Sebaceum) and cauterization are mentioned. Cautious, repeated exposures to the X-rays (*q.v.*) seem the preferable method of treatment.

Equinia.—L. *e'quus*, horse. An infectious, contagious, acute or chronic disease, caused by the bacillus mallei, derived from the horse, mule, and ass, and characterized by a pustular or deep-seated nodular, ulcerative eruption in the skin (farcy) and respiratory mucous membrane (glanders), together with grave constitutional symptoms resembling pyæmia.

The acute form is practically always fatal within six weeks. The chronic form is remittent, with about fifty per cent. of recoveries.

Mallein may be used in the same way as tuberculin for diagnostic purposes. If a suspension of the discharge is injected into the peritoneal cavity of a male guinea-pig, at the end of two days in positive cases the testicles will be swollen and the skin of the scrotum reddened.

Treatment.—If taken within an hour of inoculation, excise, if possible, the infected area with its neighboring lymphatics, and mop the wound with pure carbolic acid followed by alcohol or tincture of iodine; or open and thoroughly cauterize the seat of inoculation.

In established cases, open the farcy buds before they break down, and treat the lesions antiseptically. Cauterize nasal ulcers with chromic acid fused on the end of a probe (warm the probe, dip it in the chromic acid crystals, and warm the part of the probe next beyond the crystals until the latter melt), or with trichloracetic acid, zinc chloride, or the actual cautery, and employ a cleansing, normal saline (℥i ad Oi) or alkaline douche:

℞ Sodii bicarbonatis..... gr. iii
Sodii biboratis..... gr. iii
Acidi carbolici..... gr. i
Sacchari albi..... gr. v
Aquæ..... ℥iii–iv

When irrigating the nose, hold the head horizontally over a basin, first on one side, then on the other, and insert the nozzle each time in the upper nostril. To avoid the entrance of fluid into the Eustachian tube and middle ear, keep the mouth wide open during the irrigation, breathe through the mouth, and refrain from swallowing. In using the electro-cautery, first cocainize and then dry the parts carefully. Then turn on the current until the cautery point is at a cherry-red heat. A white heat causes hemorrhage, while a dull heat causes adherence of the point to the charred tissues. Remove the cautery before turning off the current.

The following drugs may be tried: quinine in large doses, sulphur, iodine, sodium benzoate, arsenic, creosote, but St. Clair Thomson says: "Of the many drugs which have been employed, mercury is the only one which can claim success with any show of reason." For drug dosage, formulæ, etc., see Part 11.

Mallein may be given hypodermically. Begin with one milligram, and increase the dose in the course of sixteen days to thirty milligrams. In one chronic case it was increased from one milligram to a gram in the course of a week, with recovery. (Crocker.)

Fresh air, a concentrated liquid diet consisting chiefly of milk and eggs, and subcutaneous and rectal infusions of normal salt solution (℥i ad Oi) are important.

It is advised that in the chronic form, ulcers should not be curetted or rubbed with antiseptics for fear of producing acute symptoms.

The patient should be isolated, the dressings and discharges destroyed, and contaminated materials of value either boiled or soaked for four hours in a 2½ per cent. solution of carbolic acid (see Disinfection,

Measles.

Erysipelas.

Measles.

Scarlet fever.

Scarlet fever.

Erysipelas. Measles. Scarlet fever.

mended (see Part 11, for Drugs). Says Pusey: "Granville McGowan strongly advises ten-drop doses of 1 : 1000 solution of adrenalin chloride every two hours in erythema multiforme and angioneurotic dermatoses." If the patient is debilitated, prescribe a carefully selected, nutritious diet, with perhaps codliver oil (*q.v.*) and tonics. In stubborn, recurrent cases, it is well to put the patient to bed.

Puncture bullæ with a sterile needle, and apply one of the following:

℞	Calaminæ	gr. xl
	Zinci oxidi	gr. lxxx
	Acidi borici	ʒi
	Glycerini	♏ii–viii
	Acidi carbolici	♏xx
	Liquoris calcis	ʒi
	Aquæ, q.s., ad	ʒiv

(Calamine lotion.)

℞	Mentholis	gr. x
	Adipis lanæ hydrosi	
	Petrolati mollis, āā	ʒ ss.

Erythema Nodosum.—L.; Gr. *ἐρύθημα* redness; L. *nodośus*, nodose. An uncommon, acute inflammatory affection, characterized by the occurrence of multiple, tender and painful, erythematous, roundish or oval, node-like swellings, varying in size from a large nut to an egg, localized chiefly over the tibiæ or ulnæ, and attended by slight fever, malaise, and articular pains. The lesions are bright red at first, and later undergo the color changes of a bruise. The swellings become semi-fluctuant, but never suppurate. They disappear spontaneously in from one to eight weeks.

Etiology.—The disease is toxic or infectious in nature, and occurs in association with articular rheumatism, anæmia, malaria, tuberculosis, bad hygiene, etc. The iodides and antipyrine have caused its appearance. It is possibly related to erythema multiforme.

Treatment.—Put the patient to bed on a plain, bland diet, which should be liquid if fever is present, and restrict the use of red meats and cane sugar. Open the bowels with calomel followed after six hours by a saline (see Part 11, Drugs). Elevate the legs. The salicylates and quinine are recommended. Prescribe iron as required.

For local and articular pain, apply compresses wet with lead and opium wash (*q.v.*), or ichthyol ointment, 10 per cent., or ether and alcohol, aaʒiii, with ichthyol ʒii. The nodes may be painted with flexible collodion (Jamieson). The joints may be enveloped in cotton batting.

Erythema Pernio.—See Chilblain.

Scarlatinoides.—L.; Gr. *ἐρύθημα* redness; L. *scarlati'na*, scarlet; Gr. *εἶδος* form. A rare, generalized, macular erythema, resembling that of scarlet fever, associated with slight pyrexia, but no throat symptoms, and followed by abundant desquamation. It may run its course in one or two weeks but relapses are prone to occur.

Etiology.—Some form of intoxication, *e.g.*, intestinal toxæmia, septic infection (particularly from pent-up pus, as in abscess, carbuncle, empyema, tuberculous peritonitis), gonorrhœa, uræmia, rheumatism, malaria, certain drugs and foods, such as diphtheria antitoxin, copaiba, quinine, mercury, belladonna, salicylic acid, sewer-gas shellfish, spoiled meat.

It may occur following an enema, an operation, a mercury inunction, exposure to great heat, the prolapse of an enlarged ovary.

Treatment.—Enjoin rest in bed in a warm but well-ventilated room. Attend to any possible causal influence. Open the bowels with calomel followed by salines, and give water to drink freely, preferably in the form of cream of Tartar lemonade, made by dissolving one teaspoonful of cream of Tartar in a pint of boiling water, and serving cool, flavored with a little sugar and lemon juice. Sodium salicylate, quinine, or tonics may be of service (see Part 11, Drugs). Locally a bland oil (almond oil, or cottonseed oil, or liquid vaseline), or dusting powder is all that is required. The former relieves the unpleasant tension and stiffness.

Erythrasma.—Gr. *ἐρυθρός* red. A trivial, hyphomycetic fungus disease of the skin, caused by the microsporon minutissimum, and characterized by the presence of reddish-brown patches in the axillary and genito-crural regions.

The fungus is demonstrable by a microscopic examination of the skin scrapings, after soaking the latter for fifteen minutes in liquor potassæ (*q.v.*, Part 11).

The treatment is the same as for tinea versicolor (*q.v.*).

Erythromelalgia; Red Neuralgia of the Extremities.—Gr. *ἐρυθρός* red + *μέλος* limb + *ἄλγος* pain. A very rare, chronic, intractable disease, characterized by flushing, fever, swelling and pain of a limb, aggravated when the latter hangs down.

Etiology.—Central or peripheral, organic or functional nervous disease or disturbance; cervical rib (see Part 1); obliterative endarteritis (intermittent claudication, Part 1) Raynaud's disease (*q.v.*).

Treatment.—This is usually only palliative. For the relief of pain, one may prescribe phenacetin, antipyrine, acetanelid, cannabis indica, aspirin or sodium salicylate (see

Part 11). Menthol, 10 per cent. in alcohol, oil of wintergreen, wet packs, gentle massage, if well borne, faradization or galvanization may be employed locally. The limb should be elevated. Overexertion and exposure to heat or cold should be avoided. A protracted rest of from six weeks to three months is advised.

All the nerves supplying the affected part may be stretched or cut. Amputation is even sometimes demanded.

Exfoliative Dermatoses.—L. *ex*, out + *fo'lium*, leaf; Gr. δέρμα skin. These include dermatitis exfoliativa, dermatitis exfoliativa epidemica, dermatitis exfoliativa neonatorum, erythema scarlatinoides, pityriasis rubra pilaris, and scarlet fever.

Scaling to a slight degree occurs also in measles and rubella.

Exfoliative Glossitis.—Gr. γλῶσσα tongue + *-ιτις* inflammation. See Geographic Tongue.

Glossodynia.—See Glossodynia Exfoliativa.

Eyebrows Pale and Scanty.—

℞ Tincturæ jaborandi ..... ʒi
Alcoholis ..... ʒi

℞ Acidi acetici glacialis ..... ♏x
Spiritus ætheris compositi ..... ʒi

Farcy.—See Equinia.

Favus.—L. *fav'us*, honey-comb. A chronic contagious, hyphomycetic fungus disease, caused by the achorion Schönleinii (L. dim. of Gr. ἄχωρ dandruff), and characterized by the presence, chiefly upon the scalp, of friable, sulphur-yellow, saucer-shaped crusts, with a mousy odor, which tend "sooner or later to form coalescent, mortar-like masses" (Stelwagon). The disease is followed by atrophic scarring and permanent alopecia.

The fungus is demonstrable microscopically after soaking in liquor potassæ (see Part 11) for about fifteen minutes.

The disease may be transmitted by domestic animals.

Prognosis.—Favus of the body surface is curable in from one to eight weeks. Favus of the scalp is much more difficult to cure, from six months to one or two years being required in well-established cases.

Treatment.—First crop the hair closely over the entire scalp, and keep it cropped. A paper or linen skull cap should be worn inside the hat, and the paper cap burned or the linen cap boiled daily. Remove the crusts with a knife, after softening them for twelve to twenty-four hours or longer with carbolized olive oil, gr. v ad ʒi. Then cleanse the whole scalp with hot water and green soap, shave each affected patch, rinse off the soap, and apply a lotion consisting of carbolic acid, ʒii, resorcin ʒi, boric acid, ʒiv, and water, Oi (Stelwagon). Now apply to each affected patch a depilatory consisting of barium sulphide, ʒiii, zinc oxide and powdered starch, aaʒiiss, to which sufficient water is added to make a paste. The paste should slightly overlap the edges of the patch, and should be left on for about ten minutes, or until a burning sensation is felt, when it should be washed off thoroughly. Instead of using the depilatory paste, one may epilate a small area each day with forceps, after partially desensitizing the skin with a strong solution of carbolic acid.

Each day the whole scalp should be cleansed with green soap and hot water, rinsed, dried, and the above carbolic lotion used. One of the following parasiticides is then applied to each patch:

℞ Hydrargyri chloridi corrosivi ... gr. iv–xvi
Aquæ ..... ʒiv

℞ Tincturæ iodi,
Acidi carbolici,
Chlorali hydrati, aa
(Cutler's Fluid.)

℞ Acidi pyrogallici ..... ʒss–i
Petrolati mollis ..... ʒi

℞ Chrysarobini ..... ʒss–i
Petrolati mollis ..... ʒi
(see Chrysarobinum in Part 11.)

℞ Acidi carbolici ..... ʒi
Unguenti picis liquidæ,
Unguenti hydrargyri nitratis, aa ʒii
Unguenti sulphuris ..... ʒiv
Make this up fresh once weekly. (Stelwagon.)

℞ Acidi sulphurosi ..... ʒi
Use pure or slightly diluted.

The parasiticide should be rubbed in thoroughly, for at least five minutes, at bedtime or twice daily, until irritation supervenes, when it should be discontinued and a bland ointment, such as cold cream or boric ointment, used until the irritation has subsided. The depilatory may be used every five to ten days according to the rapidity of regrowth. It should never be applied to an actively inflammatory patch.

After three or more months of this treatment, it should be discontinued for a week or longer in order to observe the effect. "If there are no signs of a return of scaliness, yellowish points, or dulled, lustreless hair in five or six weeks after cessation of treatment, the case may be considered as cured" (Stelwagon). "The treatment and necessary observation require, therefore, at least six months." (Crocker.)

For favus of the non-hairy surface, weaker parasiticides are employed:

℞ Hydrargyri ammoniati..... ʒss–i
Petrolati mollis..... ʒi

℞ Sulphuris præcipitati..... ʒss–i
Petrolati mollis..... ʒi

℞ Tincturæ iodi..... ʒi

℞ Acidi sulphurosi..... ʒi
Dilute with one to two parts of water.

Favus of the nail is very obstinate. The nail should be well scraped, and then softened by applying on lint under oiled silk or a rubber finger stall, for fifteen minutes, a solution of potassium iodide, ʒss, in ʒss each of liquor potassæ and aqua destillata. Then at once is applied on lint under oiled silk a solution of hydrargyrum perchloridum, gr. iv, in spiritus vini rectificati and aqua destillata, aaʒss. At the end of twenty-four hours the nail is again scraped and washed and the foregoing procedure repeated. When peeling and tenderness of the skin occur, a solution of sodium hyposulphite ʒi, in water, ʒviii, is used until these symptoms disappear. (Stelwagon.)

Another method of treatment is by means of the constant application, under a rubber finger-stall, of absorbent cotton soaked in a solution of iodine, gr. xv, and potassium iodide, gr. xxx, in distilled water, Oi. The nail may be first avulsed. (Stelwagon.)

Favus is best treated by means of the X-rays. The latter are applied cautiously every day or every other day until erythema is produced and the hair falls out. They are then discontinued until the reaction has subsided, when they may be repeated, if necessary. See Ringworm of the Scalp for the "Kienböck-Adamson" technique.

Fever Blister.—See Herpes Simplex.

Fibroma; Fibroma Molluscum; Neurofibroma.—L. *fib'ra*, fibre + Gr. *-ωμα* tumor; L. *molus'cum*, soft; Gr. *νεῦρον* nerve. **Synonym.**—Von Recklinghausen's Disease.

A rare hereditary and familial disease of the skin, characterized by the presence of one or more abruptly elevated, sessile or pedunculated, soft or firm, pea- to egg-sized or larger, painless, connective-tissue tumors, which begin to appear usually in childhood. Some of the growths may atrophy and leave atrophic areas in the corium; patches of pigmentation are often present; also pseudo-neuromata along the course of the nerves. The skin may hypertrophy and sag in places, particularly in the scalp, and form a pendulous mass which may carry down attached structures, such as the ear. The patient is often deficient mentally and physically.

There is a fibroma molluscum gravidarum, which disappears post partum.

Treatment.—Pedunculated tumors may be removed by means of ligation, the écraseur, the galvanocautery, or excision; sessile tumors by excision, or if small, by electrolysis (see Adenoma Sebaceum). Removal should be complete in order to avoid recurrence. In performing excision, the vessels should be secured before they are cut, or the bleeding may prove very formidable. Sagging masses of skin may be removed by a plastic operation.

The prolonged administration of arsenic (*q.v.* in Part 11) has been followed by good results.

Fig Wart—See Verruca.

Filaria Medinensis.—L. *fil'um*, thread. See Dracontiasis.

Sanguinis Hominis.—L. *fil'um*, thread; *san'guis*, blood; *ho'mo*, man. See Filariasis, in Part 1.

Filariasis.—L *fil'um*, thread.—See Part 1, General Medicine and Surgery.

Finger-Nail Diseases.—See Nail Diseases.

Fish-Skin Disease.—See Ichthyosis.

Fissured Lip.—See under Eczema.

Flea-Bite.—See Bites.

Folliclis.—See under Acne Varioliformis.

Folliculitis Barbæ.—L. *follic'ulus*, little bag + Gr. *-ιτις* inflammation; L. *barb'a*, beard. See Sycosis Vulgaris.

Folliculitis Decalvans; Cicatricial Alopecia.—L. *follic'ulus*, little bag + Gr. *-ιτις* inflammation; L. *decalv'ans*, destroying hair; *cica'trix*, scar; Gr. *ἀλώπηξ* fox. A chronic disease of hairy parts, characterized by a bald cicatricial spot bordered with follicular inflammation. The disease is rebellious to treatment, but it can be cured. The baldness, however, is permanent.

Treatment.—Clip the hair surrounding the patch, and epilate the border hairs. Cleanse the entire scalp frequently with tincture of green soap and hot water, and apply daily to the entire scalp, an aqueous solution of boric acid, ʒiv, carbolic acid ʒiss, and resorcin, ʒiss, ad Oi, or a 1 1000 solution of bichloride of mercury in alcohol or alcohol and water. Once daily, rub into the affected parts one of the following preparations:

℞ Hydrargyri ammoniati..... gr. x–ʒi
Petrolati mollis..... ʒi

℞ Sulphuris præcipitati..... gr. x–ʒi
Petrolati mollis..... ʒi

℞ Acidi salicylici..... gr. x–xx
Resorcinolis..... gr. vi–xx
Petrolati mollis..... ʒi

The X-rays are recommended (see under Favus).

Fordyce's Disease.—A not very rare disease of the oral mucous membrane and the lips, characterized by the permanent presence of abundant, pinpoint to pinhead-sized, discrete, aggregated, whitish or yellowish bodies.

Fragilitas Crinium—L. *fragil'itas*, brittleness; *crin'is*, hair. See Hair Diseases.

Framboesia; Yaws.—L. *frambœ'sia*, raspberry. A tropical, endemic, chronic infectious and contagious disease, caused by the spirochæta pertenuis, transmitted by flies, and characterized by an incubation period of two to ten weeks, and a febrile period of one to seven or more days, accompanied by articular pains, and followed by the appearance of an itching eruption of papules which usually develop into fungoid or raspberry or cauliflower-like, reddish, indolent tubercles, capped by a cheesy crust (Stelwagon).

Spontaneous recovery is the rule; but if untreated, the eruption continues in successive crops for months or years.

Treatment.—Salvarsan or neosalvarsan, administered as in syphilis (*q.v.*, in Part 1), is specific. It is said that one dose generally effects a complete cure.

During the febrile stage, the patient should be kept in bed on a concentrated liquid diet, with plenty of water, preferably in the form of cream of tartar lemonade (*q.v.*) Warm, demulcent drinks, with the patient under woolen blankets, should be given when the fever subsides, in order to hasten the rash. After the rash has appeared, one should prescribe an abundance of nutritious, easily digestible food, with codliver oil if deemed advisable, and iron for anæmia. The elixir ferri, quininæ, et strychninæ phosphati is a serviceable tonic. Potassium iodide may be of value, but mercury is not (see Drugs, Part 11).

Thorough cleanliness is important. The skin lesions may be washed with bichloride solution, 1 : 2000, and iodoform ointment (*q.v.*) applied. Touching the tubercles every five days with copper sulphate crystals is said to be the best local treatment. Small chronic growths may be destroyed by curettage followed by the application of carbolic acid. To get at troublesome lesions on the soles of the feet, soak the latter in hot soapsuds, and pare away the thick epithelium.

The patient should be segregated, and thorough disinfection of the clothing, house, etc., carried out in order to stamp out the disease (see Disinfection in Part 1). Perfect cleanliness is preventive.

Freckles; Lentigo.—L. *lentig'o*, freckle. The treatment of freckles is unsatisfactory, because they practically always recur after removal. They are best removed on the approach of autumn. The treatment is the same as that of chloasma (*q.v.*); but the stronger applications of lactic acid should be made only to individual lesions.

Frost-Bite.—See Chilblain.

Furrowed Tongue.—See Tongue Diseases.

Furuncle; Abscess; Boil.—L. *furun'culus*, a petty thief; *absces'sus*, a going apart. An acute, usually suppurative, deep folliculitis, affecting usually the pilo-sebaceous follicles, sometimes the sweat glands. Through autoinoculation a multiplicity of furuncles may appear (furunculosis).

Etiology.—Boils are caused by pus organisms, almost always the staphylococci aureus, albus, and citreus. Predisposing causes are uncleanliness, sweating and friction, dampness, sewer gas, anæmia, chronic alcoholism, nephritis, diabetes mellitus, dyspepsia, the gouty or rheumatic diathesis, menstrual disorders, working in paraffin oils, petroleum and tar products, certain drugs, particularly potassium iodide, pruritic affections (eczema, scabies, prurigo, etc.), local injury, convalescence from acute illnesses, particularly typhoid fever.

Treatment.—Endeavor to ascertain the cause. Enjoin the observance of correct hygiene, *e.g.*, adequate rest and exercise, frequent bathing, fresh air day and night, a generous dietary (excepting in gouty cases and diabetes): regular hours of eating and sleeping, rest before and after meals, perhaps tonics, such as Blaud's pills, elixir ferri, quininæ, et strychninæ phosphati, Fowler's solution, syrup of hypophosphites, and codliver oil also regulation of the bowels. A carbohydrate-poor diet may prove curative.

Yeast is well recommended: fresh brewers' yeast, a teaspoonful to a tablespoonful, t.i.d.a.c.; or the ordinary compressed yeast cake, one to two teaspoonfuls, t.i.d.a.c. (one-half teaspoonful daily to a child of two or three years (Holt); or furunculin (yeast powder); or ceridin (yeast fat; see Part 11).

Vaccine therapy is well recommended. Says Holt: "The use of vaccines is altogether the most effective treatment." "Injections should be repeated every three or four days; beginning with fifty millions (of dead staphylococci), the dose may be increased to one hundred millions."

The affected skin should be cleansed daily with soap and hot water, followed by a solution of bichloride, 1:4000 to 1:1000.

A boil may sometimes be aborted by

injecting into its base five drops of a five per cent. solution of carbolic acid; or perhaps by injecting alcohol; or by pulling out the central hair, inserting a fine probe or cotton-wound toothpick, dipped in carbolic acid, deep into the follicle, and then applying a drop of carbolic acid to the opening; or by painting on tincture of iodine or spirits of camphor three or four times daily; or by inserting a zinc positive needle of a galvanic battery into the furuncle, and employing a current of twenty to thirty milliampères for thirty minutes; or by applying the following ointment covered with adhesive plaster:

℞ Sulphuris præcipitati..... ℥ii
Ichthyolis..... ℥ii
Adipis benzoinati..... ℥i

For multiple boils, apply a 25 per cent. ointment of ichthyol.

When pointing, which may be hastened by hot applications, has occurred, or sooner if desired, incise the boil freely, and gently remove with forceps any necrotic tissue; do not curette or squeeze the abscess walls. Then pack the resulting cavity thoroughly, but not tightly, with sterile gauze, either dry, or moistened with bichloride solution, 1 : 1000; and renew the latter daily or less often according to the discharge. It is often recommended that the abscess cavity be irrigated with hot boric acid solution, ℥iv ad Oi, or normal saline solution, ℥i ad Oi, or carbolic acid solution, 5 per cent., but experience shows that the dry treatment is usually better.

Gangosa; Ogo; Rhinopharyngitis Mutilans.—See Part 9, Throat Diseases.

Gangrene of the Skin; Sphaceloderma.—L. *gangræna*; Gr. γάγγραινα mortification; Gr. σφάκελος gangrene + δέρμα skin. Gangrene is death of a part en masse due to the complete cutting off of its blood supply.

Causes.—Embolism; thrombosis, venous or arterial, occurring in syphilis, senile arteriosclerosis, diabetes, young Hebrews, etc.; vasomotor constriction, occurring in Raynaud's disease and in ergotism (symmetrical gangrene); blood extravasation (purpuric gangrene) pressure from an inflammatory effusion; pressure from a tumor; destructive external agencies, such as heat and carbolic acid; pressure and trophic defects, as in bedsore; external mechanical compression; traumatism; infectious diseases (typhoid fever, typhus fever, scarlet fever, measles, variola varicella, cerebrospinal fever, malaria, etc.); nervous diseases (syringomyelia, myelitis, tabes, cord tumor, herpes zoster, neuritis, hemiplegia, traumatism, hysteria, etc.); deliberate self-infliction; ecthyma gangrænosum; noma; gangosa.

Buerger gives the following points of differentiation between thromboangitis obliterans (occurring chiefly in young Hebrews) and Raynaud's angioneurosis: In thromboangitis obliterans, (1) one vessel, at least, is permanently pulseless; (2) intermittent claudication is usually present; (3) exacerbations are gradual in their onset and subsidence, and not sudden and paroxysmal, as in Raynaud's disease; (4) limbs which are red or blue when dependent, become ischæmic when elevated; (5) migratory phlebitis is usually associated; (6) males are chiefly affected, not females, as in Raynaud's disease.

Treatment.—This, of course, depends upon the cause (*q.v.*, in its appropriate alphabetical place and part).

In thromboangitis obliterans, one may administer the iodides and nitrites (nitroglycerine, sodium nitrite, erythrol tetranitrate, mannitol hexanitrate (see Part 11), and apply warm poultices. A meat-free and salt-free diet and copious water drinking are advised. High amputation is often required.

Geographic Tongue.—**Synonyms.**—Erythema migrans; wandering rash; exfoliative glossitis; transitory benign plaques of the tongue.

A rare, chronic disease, mostly of young children, characterized by the appearance, commonly on the lateral portion and tip of the dorsum of the tongue, of one or more well-defined, slightly elevated, superficial, grayish, scaly spots, which spread peripherally, leaving a reddened and slightly scaly central healing area. After one to ten days or longer the patch disappears, but new ones appear, and the condition may continue indefinitely; but in children, it usually disappears altogether in from a few months to rarely a year. There are no marked subjective symptoms as in glossodynia exfoliativa (*q.v.*).

Poor health, gastro-intestinal disorders, gout, and heredity are possible causal factors.

Treatment.—This is not very efficacious. Arsenic is recommended. Iron and codliver oil may be indicated. Stelwagon recommends an occasional laxative antacid, such as calcined magnesia (for drug formulæ, etc., see Part 11). Kerley does not treat it at all in children, since it soon disappears spontaneously.

The patches may be painted with tincture of myrrh or balsam of Peru. The intense burning, says Osler, is best relieved by

nitrate of silver solution. The following may be employed as a mouth-wash:

℞ Acidi borici, vel sodii biboratis, vel sodii bicarbonatis..... gr. xl
Tincturæ myrrhæ..... ℥iv
Aquæ..... ℥viii

German Measles.—See Part 1, General Medicine and Surgery.

Giant Urticaria.—See Angioneurotic Œdema.

Gila Monster.—See under Snake Bite, in Part 1.

Glanders.—See Equinia.

Glossitis Acuta.—Gr. γλῶσσα tongue + -ιτις inflammation; L. *acut'us*, sharp. See Part 1.

Exfoliative.—L. *ex*, out + *fol'ium*, leaf. See Geographic tongue.

Moeller's.—See Glossodynia Exfoliativa.

Papillaris.—L. *papil'la*, nipple. See Glossitis in Part 1.

Glossodynia Exfoliativa; Moeller's Glossitis.—Gr. γλῶσσα tongue + ὀδύνη pain; L. *ex*, out + *fol'ium*, leaf. Exfoliation of the corneous layer of the lingual mucous membrane associated with great pain.

Treatment.—"Various methods of treatment, including cauterization with lactic and chromic acids and silver nitrate, and astringent and antiseptic mouth washes have all been futile. Improvement has been recorded in a few cases after anthelmintic treatment" (Harris). Chewing tar-rope daily is said by J. Chalmers DaCosta to have possibly cured a case which resisted other methods of treatment.

Glossy Skin.—Local atrophy of the skin, due to disease or injury of the nerve supplying the affected area, *e.g.*, gunshot injury, neuritis, chronic myelitis, syringomyelia, herpes, zoster, leprosy, gout, rheumatism. The condition tends to disappear spontaneously in the course of several weeks to several years. The affected skin may be lubricated with cold cream. For pain employ hot or cold applications.

Grain Itch; Straw Itch.—A rare, transitory, itching, urticarial skin eruption, caused by a minute arthropod, the pediculoides ventricosus, which lives upon the grain-moth and joint-worm that feed upon grain. The mite may be present in straw mattresses.

Treatment.—Take a warm soap and water bath, and apply the following ointment to the eruption:

℞ Beta-naphtholis..... gr. xxx
Sulphuris præcipitati..... gr. xl
Adipis benzoinati..... ℥ i

Remember that beta-naphthol has produced toxic symptoms.

Infested mattresses may be exposed to steam or to the fumes of sulphur or formaldehyde in a vacuum chamber. Infected stubble should be raked up in the spring and burned.

Granuloma Annulare.—L. *gran'ulum*, grain + Gr. -ωμα tumor. See Lichen Annularis.

Endemicum.—See Oriental Sore.

Fungoides.—See Mycosis Fungoides.

Inguinale Tropicum.—L. *gran'ulum*, grain + Gr. -ωμα tumor; L. *ing'uen*, groin; Gr. τροπικός, turning. A chronic, usually tropical, linear ulceration in the groin and neighboring parts, with papillary overgrowth.

Treatment.—Thorough curettement, followed by swabbing with carbolic acid, is curative. (Crocker.)

Pudendæ Ulcerosa.—L. *gran'ulum*, granule + Gr. -ωμα tumor; L. *pude're*, to be ashamed; *ulc'us*, ulcer. A chronic, tropical, auto-inoculable, recurrent ulcerating granuloma, without constitutional symptoms.

Treatment.—Curettage and cauterization may be employed; but it is probably best to excise the entire growth if not too large. Large doses of potassium iodide (see Part 11) may be tried. The disease is difficult to cure.

Granulosis Rubra Nasi.—L. *gran'ulum*, granule; *ru'ber*, red; *nas'us*, nose A rare, chronic, cutaneous disease of children, affecting usually the nose, characterized by a reddish hyperæmic patch "dotted with minute macules and maculo-papules," and "associated with hyperidrosis and poor peripheral circulation." It tends to disappear spontaneously toward adult life. (Pusey.)

Treatment.—Says R. A. Bolam: "Good results may be obtained by repeated short applications of carbon dioxide snow or resorcin paste of medium strength. Marked benefit is also seen from X-ray treatment (*q.v.*) Soon after puberty the condition begins to retrogress, and ultimately will practically clear up, even if no treatment be undertaken."

Gray Hair.—See under Hair Diseases.

Ground Itch; Uncinarial Dermatitis.—L. *uncina'tus*, hooked; *un'cus*, hook; Gr. δέρμα skin + -ιτις inflammation. An itching, vesiculo-pustular dermatitis, occurring usually between the toes, and caused by the larva of the hook-worm (see Ankylostomiasis, Part 1).

Treatment.—If seen in the very beginning stage of reddish spots, apply turpentine. In the later stages open all vesicles, blebs and

pustules, and soak the parts in hot bichloride solution, 1 : 2000. The affection is thereby healed in about twelve days.

As a preventive measure, avoid going barefoot in the warm, rainy season.

Guinea-Worm Disease.—See Dracontiasis.

Gum Rash.—See Miliaria.

Hair Diseases.—**I. Baldness.**—See Alopecia.

II. Canities.—L. See V, Grayness.

III. Chignon.—See IX, Piedra.

IV. Fragilitas Crinium (L., brittleness and splitting of the hair).—Keep the hairs clipped off just below the cleft part; or, if the splitting or brittleness is at the root ends of the beard, shave constantly for a time. Keep the scalp or face and hair clean and the hair very slightly oiled by combing with a slightly oiled comb.

V. Grayness.—Grayness of the hair may be congenital, hereditary, or acquired. Acquired grayness may occur in patches, due to nerve disease or injury, leukoderma, or alopecia areata; or it may be general, due to senility, exhausting illness, or severe nervous strain or shock.

Treatment.—In cases due to exhausting illness, nervous strain, or nerve lesions, one may try careful hygiene and tonics, such as arsenic, and strychnine (see Part 11). Faradization with the wire brush electrode and the administration of pilocarpine (*q.v.* in Part 11) may be of service.

Black Dye:

℞ Argenti nitratis..... gr. lxxv
Plumbi acetatis..... gr. xv
Aquæ cologniensis..... ♏xv
Aquæ rosæ, q.s., ad..... ℥viii

M. Sig.—Thoroughly moisten the hair, and dry in the sunlight.

Brown Dye:

℞ Pyrogallol..... gr. xl
Aquæ cologniensis..... ♏lxxv
Aquæ rosæ..... ℥iii

(After Stelwagon.)

VI. Hypertrichosis.—Gr. *ὑπέρ* over + *θρίξ* hair. For the removal of a moderate growth of facial hair in women, employ electrolysis. Do not operate on lanugo hair, as the growth of the hair may be thereby stimulated. The surface operated upon should be on a level with the eyes; a magnifying lens may be used. The position of the hair papilla, except under the chin, is usually indicated by the direction of the hair shaft. The strength of current required is from ¼ to 1½ milliampères (Stelwagon); 2 to 5 milliampères (Pusey). A platinum or iridoplatinum needle is used; and needle and holder are attached to the negative pole. There should be no interrupter on the needle-holder. First wipe off the part with alcohol. Introduce the needle into the hair follicle alongside of the hair shaft down to the papilla (1/16 to ¼ inch). The current is then made by the patient touching the positive electrode, which is covered with a wet sponge. The current is allowed to act until gas bubbles appear (ten to thirty seconds with the weaker currents), during which the needle is moved about a trifle in the follicle. The weakest possible current should be employed on the upper lip. Before the needle is withdrawn, the patient should remove her hand from the positive electrode. The hair should then come out with little or no traction (Stelwagon). Pusey prefers to have the current on continuously during the insertion and withdrawal of the needle. Do not insert the needle in the same papilla twice at the same sitting, and avoid neighboring hairs within a radius of ⅛ inch, in one sitting. Wipe off the part with alcohol at the close of the sitting. The patient should apply hot water for several minutes two or three times daily during the ensuing two days. After the reaction has subsided (several days to a week) the operation may be repeated. Remember that the careless use of electrolysis produces disfiguring scars.

Other measures are as follows

(a) Rubbing with pumice stone every few days.

(b) Bleaching with equal parts of hydrogen peroxide and ammonia water, frequently repeated.

(c) The use of depilatories:

℞ Barii sulphidi (freshly made)..... ℥ii–iv
Zinci oxidi,
Amyli, aa, ad..... ℥i

M. Sig.—Add sufficient water to make a paste; apply thickly, and allow to remain on for one to two minutes, or until a sensation of heat is produced; then wash off and apply a dusting powder or a little cold cream. Repeat as soon as the hair reappears (about every one or two weeks).

Crocker does not sanction the use of depilatories.

(d) The X-rays (*q.v.* in Part 1.) Give a sufficient dose, through a .5 mm. aluminum filter, to ensure depilation at the end of a fortnight. Then give a second dose, also through a .5 mm. filter. The latter dose should produce permanent alopecia (Knox). It should be remembered that telangiectasis sometimes occurs, even as long as three years afterward, in cases in which a reaction was produced. A large dose is required to produce permanent alopecia, with resulting damage to the skin.

VII. Lepothrix.—Gr. λέπος scale + θρίξ hair. Bacterial, roughly nodular concretions upon the hairs of the axillary and inguinal regions.

TREATMENT.—Shave the parts, wash frequently with soap and hot water, and apply a solution of corrosive sublimate in alcohol, 1 : 500.

VIII. Monilithrix.—L. *moni'le*, necklace + Gr. θρίξ hair. Beaded hair, usually congenital and hereditary. Treatment is ineffectual.

IX. Piedra (Sp. for stone).—A disease of Colombia, in South America, characterized by the presence of hard, pinhead sized, nodular concretions on the hair shaft produced by a hyphomycetic fungus.

TREATMENT.—Soften the nodules with benzine or ether, and comb them out with a fine-toothed comb. Wash the hair frequently with hot bichloride solution, 1 : 1000. The latter should be hot in order to soften and penetrate the nit-like nodules.

X. Tinea Nodosa.—L. *tinea*, moth; *nod'us*, knot. A hyphomycetic fungus disease of the hairs of the bearded region, characterized by the presence of irregular nodular incrustations.

TREATMENT.—Shave or clip the hair frequently, and apply hot bichloride solution, 1 : 2000.

XI. Trichiasis.—Gr. τριχίασις inverted or ingrowing hairs. Irritation and pruritus may be induced. Epilate the hairs or destroy their papillæ by electrolysis (see under Hypertrichosis, VI).

XII. Trichorrhexis Nodosa. Gr. θρίξ hair + ῥῆξις fracture; L. *nod'us*, knot. A rebellious disease, characterized by the presence of minute whitish swellings along the hair shaft, where the hair has swollen and burst, producing the appearance of two small brushes jammed together end to end. It is seen most frequently in the beard.

TREATMENT.—One may try frequent shaving and the use of hot bichloride solution, 1 : 2000 to 5000, or pyrogallol, 1 per cent. ointment or 2 per cent. aqueous solution. It is recommended that the affected hairs be extracted, and the parts touched daily with tincture of cantharides, pure or diluted, according to the sensitiveness of the skin, until the hair has well reappeared. The general health should receive attention. Change of climate has been successful. (After Stelwagon.)

Harvest Bug.—See Bites.

Harvest Rash; Erythema Autumnale.—L., from Gr. ἐρύθημα redness. A local, itching, papula-vesicular or pustular eruption, occurring in autumn in parts of England, and caused by a minute larva parasitic upon the harvest spider.

The parasite is killed by benzine.

Heat, Prickly.—See Miliaria.

Rash.—See Miliaria.

Hemangioma.—Gr. αἷμα blood + ἀγγεῖον vessel + -ωμα tumor. See Nævus Vasculosus; and Telangiectasis.

Henoch's Purpura.—See Purpura.

Herpes Facialis.—Gr. ἕρπειν to creep; L. *fa'cies*, face. See Herpes Simplex.

Gestationis.—L. *gestat'io*, pregnancy. See Dermatitis Herpetiformis.

Iris.—Gr. ἶρις a rainbow or halo. See Erythema Multiforme.

Progenitalis.—Gr. πρό before + L. *genital'is*, genital. See Herpes Simplex.

Herpes Simplex.—Gr. ἕρπειν to creep; L. *sim'plex*, simple; herpes signifies a cluster of vesicles. An acute inflammatory affection, usually of the muco-cutaneous region of the face (herpes facialis) or genitals (herpes progenitalis), characterized by the sudden appearance of a cluster of small vesicles, upon an inflammatory base, which usually disappear in from five to ten days. The affection on the face constitutes the familiar "cold sores" or "fever blisters."

The two varieties will be considered separately.

I. Herpes Facialis.—ETIOLOGY.—Acute febrile affections, *e.g.*, catarrhal fever, bronchitis, pneumonia, influenza, malaria, acute miliary tuberculosis, epidemic cerebrospinal meningitis, the exanthemata, typhoid fever; digestive disturbances; gout; arsenical poisoning; dental caries; disease of the fifth nerve; facial paralysis; cold winds; sea air; sunlight; traumatism.

TREATMENT.—The following astringent applications are used, *e.g.*, spirits of camphor; cologne water; zinc sulphate, gr. i–iv to the ounce of alcohol and water; tincture or compound tincture of benzoin, the latter especially where fissures have formed: two or three coatings are painted on several times a day and allowed to dry with the mouth open. Pusey recommends the application of collodion for persistent, deep fissures. When crusting occurs, apply cold cream or camphor ice. Arsenic (see Part 11) is recommended in persistent and oft-recurring cases. The underlying cause should, of course, be searched for.

II. Herpes Progenitalis.—Consult Part 2, on Gynæcology; or Part 3, on Male Genito-Urinary Diseases.

Herpes Zoster; Zona; Shingles.—Gr. ἕρπειν to creep; ζωστήρ girdle; L. *zo'na*, girdle

or belt. An acute interstitial inflammation of one or several of the spinal or cranial sensory root ganglia, manifested clinically by an eruption, consisting of groups of large papulo-vesicles on an inflammatory base, confined to the cutaneous distribution of the nerve fibres of the affected ganglia. The eruption is usually preceded by several days of fever and neuralgic pains, and the latter may persist. The vesicles rupture after a few days and leave dark red spots. The thoracic, lumbar, and supra-orbital regions are the most common sites. The disease runs a course of from two to eight weeks. Persistent neuralgia or paralysis rarely follows. If the eye is involved it may become destroyed (see Keratitis Neuropathica, in Part 6, Eye Diseases).

Etiology.—Sudden checking of the perspiration (said to be the most important exciting cause); damp, changeable weather; neurotic predisposition; severe mental emotion; dietary indiscretions; insufficient food; debility; diabetes; acute chorea; peripheral nerve injury or irritation, due to a blow, gunshot wound, extraction of a tooth, tumor pressure, dental caries, a cold draught; invasion of the dorsal root ganglia by tumors, tuberculosis, acute cerebro-spinal meningitis, tabes, streptococci, etc.; malaria; pulmonary disease; intestinal parasites; arsenic; carbon monoxide; spinal manipulation.

The investigations of Rosenow and Oftedal show that the disease may be caused by a selective invasion of the sensory ganglia by streptococci.

Treatment.—Make a careful examination into the cause, looking particularly for some focus of infection in the throat, etc. Open the bowels by means of calomel or castor-oil, followed after six hours by a saline (see Part 11, for drug formulæ, etc.); and, if there is fever, prescribe a concentrated, liquid diet. If there is much pain, give phenacetin or antipyrine, or aspirin, or aconitine, gr. $\frac{1}{500}$ every hour for three or four doses, or until constitutional symptoms (*q.v.* in Part 11) appear, then every three or four hours (Dench, who says it "can be relied upon to give relief"). Other pain-relieving measures are (1) light freezing with ethyl chloride over the spine at the exit of the affected nerve; (2) the application of the galvanic current, one to five milliampères, for five to ten minutes, once or twice daily, with the positive electrode over the main nerve supply, and the negative electrode gently moved to and fro over the diseased area (Author?————); (3) Hypodermics of morphine over the affected nerve.

Local applications, protective, anodyne, and antiseptic (to be covered with cotton and a gauze bandage), are the following:

℞	Mentholis	gr. x–xl
	Alcoholis	ʒiv
℞	Acidi carbolici	gr. –xx
	Alcoholis	ʒiv
℞	Calaminæ,	
	Zinci oxidi, aa	ʒii
	Acidi borici	ʒi
	Glycerini	ɱxxx
	Acidi carbolici	ɱxx
	Liquoris calcis	ʒi
	Aquæ, q.s., ad	ʒiv
℞	Adrenalini chloridi	gr. v
	Cocainæ chloridi	gr. xii
	Aquæ	ʒi
℞	Acidi carbolici vel Thymolis	gr. x
	Collodii flexilis	ʒii
℞	Zinci oxidi, partes	1
	Glycerini, partes	3
	Gelatini, partes	2
	Aquæ, partes	4–6

When needed, melt over a water bath (in a double oatmeal boiler) and apply with a broad brush. After three to five days, soften and remove with hot water, and apply a fresh dressing. (Stelwagon.)

℞	Zinci oxidi,	
	Acidi borici,	
	Talci, aa.	
℞	Mentholis	gr. xv–xx
	Amyli	ʒi–ii
	Unguenti zinci oxidi	ʒi

(Stelwagon.)

For debility, prescribe a liberal diet, perhaps codliver oil, and Fowler's solution, or elixir ferri, quininæ, et strychninæ phosphati (see Part 11).

Intractable post-herpetic neuralgia may demand section of the affected dorsal spinal root or roots; or, in trigeminal neuralgia, extirpation of the Gasserian ganglion or its injection with alcohol.

Hidebound Skin.—See Scleroderma.

Hidrocystoma.—Gr. ἱδρώς sweat + κύστις cyst + -ωμα tumor. An uncommon affection of the face, characterized by the formation of deep-seated, non-inflammatory, sweat retention cysts, appearing as pinhead to pea-sized, tense, shining, thin-walled vesicles, which disappear in the course of two weeks.

Heat and steam moisture, as over the washtub and fire, seem to be the causal factors.

Treatment.—Puncture the vesicles with a sterile needle; and apply, twice daily, an alcoholic solution of resorcin (gr. ixss

ad ʒi); or dust with equal parts of zinc oxide and starch, or zinc oxide, boric acid and talcum, or bismuth and talcum.

Hirsuties.—L. *hirsu'tus*, shaggy. See Hypertrichosis, under Hair Diseases.

Hives.—See Urticaria.

Hook-Worm Dermatitis.—See Ground Itch.

Horn, Cutaneous; Cornu Cutaneum.—L. *cor'nu*, horn; *cut'is*, skin. Excise the growth; or break off and dissect the horn from its base, and then apply caustic potash, or chloride of zinc paste (see under carcinoma cutis) or the galvanocautery. The entire base should be removed for fear of carcinomatous change.

Hydroa Vacciniforme; Recurrent Summer (rarely Winter) Eruption.—Gr. *ὕδωρ* water; L. *vaccinia*, cow-pox + *for'ma*, form. A rare, recurrent, inflammatory, vesicular, scarring eruption, appearing on uncovered parts, nearly always in summer, and caused by exposure to sunlight, heat, cold, or winds. The affection begins to manifest itself usually during the second or third year of life, nearly always in males, and disappears, as a rule, only on the approach of adult age, so that it seems to indicate a congenital susceptibility to certain forms of external irritation, which gradually leads to immunity.

Treatment.—The exciting causes should, of course be avoided. Arsenic, quinine, belladonna, and the salicylates (see Part 11) are variously recommended. To avoid scarring, if possible, puncture each vesicle as soon as possible, and apply iodoform powder or ointment, or its solution in ether. Soften and remove crusts with carbolized oil, one in forty, and apply an antiseptic ointment:

℞ Acidi borici ..... gr. xx
Iodoformi ..... gr. v
Creolini ..... ♏v
Adipis benzoinati ..... ʒi
(Crocker.)

℞ Ichthyolis ..... ʒii–iv
Petrolati mollis ..... ʒi

℞ Resorcinolis ..... gr. xv
Petrolati mollis ..... ʒi

Hyperidrosis.—Gr. *ὑπέρ* over + *ἱδρώς* sweat: excessive sweating. **A. General Hyperidrosis.**—Causes.—Debility; neurasthenia or nervous temperament; tuberculosis; rheumatic fever; malaria; septicæmia; leukæmia; lithiasis; cholelithiasis; rickets; alcoholism; incipient exophthalmic goitre; obesity; central nervous lesion; convalescence from infectious diseases; unknown influences.

Treatment.—Attend to any possible etiological influence. For debility, prescribe rest, fresh air day and night, an abundance of nutritious, easily digestible food, regular hours of eating and sleeping, and, if need be, codliver oil and tonics, such as Fowler's solution, Blaud's pills, elixir ferri, quininæ, et strychninæ phosphati, syrup of hypophosphites, or the mineral acids and nux vomica (see Part 11).

℞ Acidi hydrochlorici, vel sulphurici, vel nitro-hydrochlorici, diluti... ʒiss (♏xx per dose)
Tincturæ nucis vomicæ.. ʒiv (♏vii per dose)
Glycerini ..... ʒii (♏xxvii per dose)
Aquæ, q.s., ad ..... ʒvi
M. Sig.—One teaspoonful in water before meals.

For night-sweats due to debility, give milk at bedtime, to which may be added two or three teaspoonfuls of whiskey or brandy; or arouse the patient two hours before the expected sweat and give food.

Special internal remedies are atropine or belladonna, pushed to the physiological limit, agaracinate of sodium or lithium, agaracin, muscarin, picrotoxin, salvia or sage, ergot, camphoric acid, hydrastis, nux vomica, zinc oxide, bromural, tellurate of sodium or potassium, quinine in full dosage, aromatic sulphuric acid (see Part 11 for drug formulæ, etc.), or best of all, in Crocker's experience, precipitated sulphur, a level teaspoonful in milk, twice a day, or if this purges too much, the following combination:

℞ Pulveris cretæ compositæ ..... ʒvi
Pulveris cinnamomi compositi ..... ʒii
Sulphuris præcipitati ..... ʒi
M. Sig.—A teaspoonful twice a day. (Crocker.)

Frequent bathing is essential. The skin may be sponged or powdered with one of the following preparations, viz., vinegar; alcohol and water, equal parts; alum solution ʒiv ad Oi; quinine, gr. lxxx ad Oi; formalin (40 per cent.) and alcohol, equal parts; tannoform; salicylic acid, gr. v–xxx, and boric acid, ʒi; salicylic acid three parts, wheat starch, ten parts, and talcum, 87 parts; zinc peroxide, ʒi, and talcum, ʒiss. The formalin is said to be very efficacious, its effect lasting usually several nights. Tannoform is also well recommended. A flannel nightgown should be worn, and not too much bed-covering.

B. Local Hyperidrosis.—Causes.—Debility; rickets (head sweating); affection of a cutaneous nerve; prolonged standing; flat-foot.

Treatment.—The best treatment, for lasting results, is the cautious application, once to thrice weekly, of the X-rays (*q.v.*) until the excessive sweating ceases, repeating the exposures in case of recurrence. "It is

not necessary to produce an erythema" (Pusey). Knox recommends a full pastille dose, repeated every fourteen days, four applications being usually sufficient. A .5 mm. filter should be used after the first exposure.

Palliative local measures are as follows:

(1) After scrubbing the parts thoroughly with soap and hot water, rinse, and sponge for several minutes, twice daily, with a solution of tannic acid, alum, or zinc sulphate, ʒi–viii to the pint of water; or formalin, ʒiss to the pint of water, gradually increased in strength; or tincture or liniment of belladonna (*q.v.* in Part 11, watch for toxic effects); or a strong solution of extract of pinus canadensis. Then dry, and dust on powdered boric acid, with or without salicylic acid, gr. v–xxx ad ʒi. Dust the stockings and shoes also with this powder (see Bromidrosis).

(2) Cleanse and dry the feet, and apply on lint followed by a bandage, either unguentum diachylon (*q.v.*) or tannic acid, ʒi–ii, in sevum præparatum and petrolatum molle, of each ʒss. After twelve hours, rub the parts dry with boric acid powder and a cloth, and reapply the ointment. Continue this procedure for from ten days to two weeks, or until free desquamation occurs; then employ an astringent lotion followed by the aforementioned boric and salicylic powder twice daily for another one or two weeks, when the former treatment may be repeated, if necessary (Stelwagon).

(2) Faradic and galvanic electricity.

Hypertrichosis.—Gr. *ὑπέρ* over + *θρίξ* hair. See under Hair Diseases.

Hypertrophia Unguium.—Gr. *ὑπέρ* over + *τροφή* nutrition; L. *ŭnguis*, nail. See Nail Diseases.

Ichthyosis.—Gr. *ἰχθύα* fish-skin. Ichthyosis, or fish-skin disease, is a chronic congenital and usually hereditary disease of the skin, "characterized by more or less generalized dryness and harshness (xeroderma—Gr. *ξηρός* dry + *δέρμα* skin), slight to plate-like scaliness, and a variable degree of follicular papulation (ichthyosis simplex), sometimes warty or horn-like (ichthyosis hystrix. Gr. *ὕστριξ* hedgehog)." (Stelwagon.)

Prognosis.—Treatment is only palliative, not, as a rule, curative. The removal of scaliness and the maintenance of a soft and pliable condition of the skin are the objects of treatment.

Treatment.—Pilocarpine and thyroid extract (the latter is the better) are only of temporary benefit. The treatment is local.

The patient should bathe frequently, every day if necessary, with warm or hot water and green soap, followed by the inunction of a bland oil, such as cold cream; oil of sweet almonds; cottonseed oil; olive-oil; benzoinated lard; vaseline or olive-oil, two parts, and lanolin, one part; emulsion of lanoline, one part, in lime-water or rose-water, ten parts; glycerine, ʒss–ii, and sodium biborate, gr. xlviii, ad aquam, ʒi (the latter two especially for the face and hands).

Where the hyperkeratosis is not sufficiently influenced by the above treatment, Stelwagon recommends the following keratolytic ointment, which should be well rubbed in, at first twice a day, and later two or three times a week:

℞	Resorcinolis	gr. xv–xlviii–ʒiss
	Acidi salicylici	gr. x–xlviii
	Glycerini	♏xx
	Adipis lanæ hydrosi	ʒii
	Adipis benzoinati, Petrolati mollis, aa	ʒiii

(Stelwagon.)

To remove the horny accumulations of ichthyosis hystrix, first remove the horny caps, then paint the underlying skin with a saturated solution of salicylic acid in alcohol, in order to destroy the papillæ and produce scarring. To the latter end, one may also employ the knife, curette, or galvanocautery, bearing in mind that the keratosis is deeper than it appears. The daily application of a 10 to 25 per cent. salicylic ointment, in conjunction with hot water and green soap baths, is of service in dissolving and removing the horny caps and plates.

Ichthyosis of the Tongue.—Gr. *ἰχθύα* fish-skin. See Leucoplakia Buccalis.

Impetigo Contagiosa.—L. *impetére*, to attack. A common, contagious, superficial, pyogenic skin disease of childhood, usually observed about the mouth, chin, nostrils, occipital region and fingers, which appears as a flat vesicle or pustule, varying in size from that of a pea to a finger-nail, the contents of which dry into a yellow scab which has the appearance of being stuck on the surface; other discrete lesions soon appear by surface inoculation; there is, as a rule, no conspicuous areola. The disease is an infection of the superficial layers of the skin by any of the common pus organisms, streptococci or staphylococci.

It is readily cured in a few days.

Treatment.—First open fresh lesions and remove all crusts after softening with sterile olive-oil or soap and hot water. Then cleanse the affected surface with an antiseptic lotion, such as bichloride, 1 : 4000 to 2000,

or boric acid solution, ʒiv ad Oi, or carbolic lotion, gr. v ad ʒi, or creolin, 1 per cent., and rub gently but thoroughly into the base of each lesion, two or three times daily, the following ointment:

℞ Hydrargyri ammoniati..... gr. x–lx
Petrolati mollis..... ʒi

If the crusts are very adherent, they may be covered with the white precipitate ointment until they become softened.

If a large surface is affected, substitute bichloride lotion and boric ointment, 10 per cent., applied on lint or linen, for the mercury ointment, in order to avoid mercurial poisoning.

Employ boric acid solution for conjunctival lesions.

In scalp cases, look for pediculi.

Impetigo Herpetiformis.—L. *impetére*, to attack; Gr. ἕρπης herpes + L. *for'ma*, form. An extremely rare, usually fatal, infectious disease, occurring usually in pregnant women, and characterized by the appearance of numerous, closely grouped, peripherally spreading, pinhead-sized pustules, associated with grave constitutional symptoms, viz., high intermittent fever, chills, delirium, vomiting, diarrhœa, prostration. The closely crowded pustules tend to occur in circular groups.

Treatment.—Abortion (see Part 4) is advised when the disease occurs in a pregnant woman. Mayer, quoted by J. W. Williams, advises the intravenous injection (see Part 1) of small amounts of blood serum obtained from normal pregnant women (see Blood Transfusion, in Part 1). Concentrated liquid nourishment, brandy or whiskey, and quinine hydrochlorate, gr. v–x, every four hours, (see Part 11), are recommended.

Treat the local condition like pemphigus (*q.v.*).

Insect Bites.—See Bites.

Intertrigo.—L. *in'ter*, between + *terére*, to rub. A readily curable, superficial dermatitis, which occurs in the folds of the body surface as a result of friction, moisture, and irritating secretions.

Causal influences are obesity, uncleanliness or the reverse, diarrhœa in infants, diabetes mellitus, acid urine in gout.

Treatment.—The parts should be kept clean, and protected against friction by means of lint or absorbent cotton or flat muslin or cheesecloth bags, filled with the dusting powder given below, and quilted to prevent shifting of the powder.

One of the following applications may be used two or three times daily:

℞ Calaminæ,
Zinci oxidi, aa..... ʒii
Acidi borici..... ʒi
Acidi carbolici..... mxv
Liquoris calcis..... ʒi
Aquæ, q.s., ad..... ʒiv

℞ Pulveris acidi borici..... ʒi
Pulveris zinci oxidi..... ʒii
Pulveris talci..... ʒv

For the buttocks, in infants, one may use olive oil or cold cream, or zinc oxide ointment (*q.v.* in Part 11).

Inverted Hairs.—L. *in*, into + *ver'tere*, to turn. See Trichiasis under Hair Diseases.

Ionic Medication.—Gr. ἰών going. see Part 1, General Medicine and Surgery.

Itch.—See Scabies; Tinea Sycosis or Barber's Itch; Grain or Straw Itch; Dhobie Itch; and Ground Itch.

Itching.—See Pruritus.

Ivy Poisoning.—See Dermatitis Venenata.

Jigger or Sand-Flea.—See Bites.

Keloid.—Gr. χηλίς scar; χηλή claw; εἶδος form. An "irregularly shaped, elevated, smooth, firm, pinkish or pale reddish, cicatriform" (Stelwagon), connective-tissue new-growth of the corium, the result usually of traumatism; in other words, an "exuberant scar."

Treatment.—The best treatment is with radium (*q.v.*) or the X-rays (*q.v.*). Give a full pastille dose without a filter, then at the end of fourteen days, a second dose with .5 mm. of aluminum as a filter, followed by exposures at regular intervals until the desired degree of flatness, softness, and flexibility is obtained. (Knox.)

Other less reliable methods of treatment are as follows:

(1) Multiple, deep, criss-cross, linear incisions through the whole thickness of the growth, mincing it thoroughly, remembering that the depth below the skin equals the elevation above it; the scarification to be followed immediately by a dry or wet boric acid dressing; the next and subsequent days one of the following plasters applied continuously, and pressure exerted by a pad and bandage or adhesive straps:

℞ Acidi salicylici..... gr. x–xx
Ichthyolis..... ʒi–ii
Emplastri plumbi,
Emplastri saponis, aa..... ʒiii
Petrolati, q.s., ad..... ʒi
(Stelwagon.)

℞ Emplastri hydrargyri..... ʒi

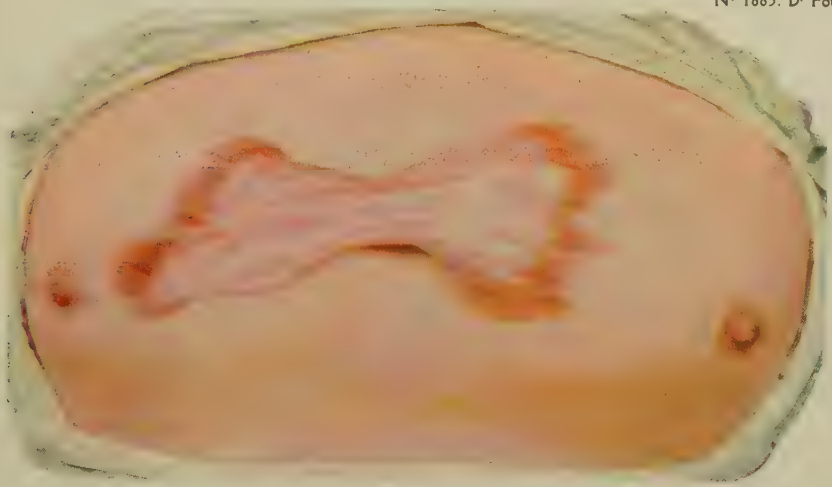
(2) Electrolysis: current of about five milliampères, the needle inserted at various places close together, and thrust in from the edge slantingly toward the centre; several repetitions are necessary.

1. — *Chloasma.*

N° 1514. Dr Fournier

2. — *Palmar anhidrosis.*

N° 1883. Dr Fournier.



3. — *Keloid.*

N° 1981. Dr Balzer.

4. — *Dermatitis herpetiformis.*

St. Louis Hospital Museum, Paris.

N° 1373. Dr Tenneson.

SKIN DISEASES : **Keloid. Chloasma. Dermatitis herpetiformis and palmar anhidrosis.**

(3) Injections of ten to twenty minims of a 10 to 15 per cent. solution of thiosinamin in equal parts of water and glycerine, followed by massage.

(4) Injections at many points of a 20 per cent. solution of creosote in olive oil until the growth becomes pale; repeated when the resulting inflammation and sloughing have healed.

(5) Chlorine ionization (see Ionic Medication, in Part 1).

(6) Thyroid extract, or arsenic internally (see Part 11).

Keratoangioma.—See Angiokeratoma.

Keratosis Follicularis seu Vegetans.—Gr. *κέρας* horn; L. *jollĭculus*, little bag; *vegetátio*, growth. An extremely rare, persistent, symmetrically distributed, abundant eruption, usually beginning in early life, and as a rule on the face or scalp, later involving principally the neck, sternal, interscapular and sacral regions, arms, legs, the flexures and mucous orifices, and characterized by a hyperkeratosis beginning in the openings of the pilo-sebaceous follicles and resembling keratosis pilaris (conical horny lesions with a central sebaceous concretion which can be squeezed out), later spreading beyond these openings and forming papular and papillomatous horny masses.

Treatment.—This can be only palliative. The parts may be bathed daily with green soap and hot water, followed by the thorough rubbing in of one of the following ointments:

℞ Acidi salicylici..... gr. xv
Sulphuris præcipitati..... ʒi
Pulveris amyli,
Pulveris zinci oxidi, aa.... ʒiss
Petrolati mollis..... ʒiv

℞ Resorcinolis..... gr. xv–xlviii–ʒiss
Acidi salicylici..... gr. x–xlviii
Glycerini..... ♏xx
Adipis lanæ hydrosi..... ʒii
Adipis benzoinati,
Petrolati, aa..... ʒiii
(Stelwagon.)

The treatment is really that of ichthyosis (*q.v.*). The thermocautery (without anæsthetization) is well recommended. Röntgentherapy (*q.v.*) may be tried. Crocker suggests the trial of thyroid extract (see Part 11). For the offensive secretions from the axillæ and groins are recommended europhen, (*q.v.*) starch powder containing formaline, ♏xv to the ounce, and sulphur baths etc. (pot. sulphide, ʒii–iv to 30 gal. water).

Scalp cases are treated like seborrhœic dermatitis (*q.v.*).

Keratosis Follicularis Contagiosa.—Gr. *κέρας* horn; L. *jollĭculus*, little bag; *contágio*, contact infection. An exceedingly rare disease, resembling keratosis follicularis seu vegetans (*q.v.*, above), from which it is distinguished by the absence of papillomatous masses, greasiness, and offensive odor, its apparent contagiousness, and its ready response to simple softening with green soap and hot water.

Keratosis Nigricans; Acanthosis Nigricans.—Gr. *κέρας* horn; *ἄκανθα* prickle or spine; L. *nig'er*, black. An exceedingly rare disease of the skin and mucous membranes, of symmetrical distribution, characterized by the development of warty growths and pigmentation, usually secondary to visceral carcinoma. Exposure to great heat has been causative.

The condition may disappear following the removal of carcinoma. Otherwise it is not amenable to treatment.

Keratosis Palmaris et Plantaris.—Gr. *κέρας* horn; L. *pal'ma*, palm; *plańta*, sole of the foot. Hypertrophy of the corneous layer of the palms and soles into hard plates. It is often congenital or hereditary. Arsenic is rarely the cause.

The treatment is that of callositas (*q.v.*).

Keratosis Pilaris.—Gr. *κέρας* horn; L. *pil'us*, hair. A common affection, characterized by an accumulation of horny cells (hypercornification) about the mouths of the hair follicles, forming small corneous papules or plugs. It occurs chiefly on the postero-lateral aspect of the arms and antero-lateral aspect of the thighs, and imparts to the touch the sensation as of running the fingers over a nutmeg-grater.

Infrequent bathing is a frequent causal factor.

It can usually be removed in the course of a few weeks.

Treatment.—Bathe the affected parts frequently with warm water and green soap or plain soap, followed perhaps by the application of a little almond, olive, or cottonseed oil or cold cream. Codliver oil (see Part 11) internally may be of service. To resistant patches may be applied salicylic acid ointment, gr. x–xxx ad ʒi, or the following strongly keratolytic preparation:

℞ Acidi salicylici,
Resorcinolis, aa..... gr. xlviii
Sulphuris præcipitati..... gr. xii
Glycerini amyli..... ʒi
(Sabouraud.)

If this causes much smarting, remove it after an hour's time, otherwise leave it on for several hours or over night. Any resulting irritation is relieved with cold cream or zinc oxide ointment (*q.v.*) Continue its use until exfoliation occurs.

Keratosis Plantaris.—See Keratosis Palmaris et Plantaris, above.

Senilis.—See Atrophia Cutis Senilis.

Vegetans.—See Keratosis Follicularis seu Vegetans.

Kerion.—Gr. *κηρίον* honey-comb. See Ring-worm.

Kraurosis Vulvæ.—Gr. *κραῦρος* dry; L. *vulv'a*, vulva. Progressive atrophy and contraction of the vulvar cutaneous tissues, associated with intense itching, and followed by narrowing of the introitus. Epitheliomatous changes sometimes occur.

Treatment.—Attend to any vaginal discharge (see Leucorrhœa, in Part 2). Thickened patches of leucoplakia (Gr. λευκός white + πλαξ plate) may be removed with the curette, followed by the continuous application of a 0.5 to 2 per cent. solution of salicylic acid alternately with a solution of pyrogallol same strength; repeat this treatment if the condition recurs (Stelwagon). Röntgen-therapy (*q.v.*) is valuable. Excision of the diseased parts is curative.

As a palliative measure, one may paint the affected surface, every ten days or less often, with silver nitrate solution, 10 to 50 per cent., or tincture of iodine, or pure carbolic acid, or pure ichthyol; and have the patient employ at home, hot compresses wet with creolin, 5 per cent., or carbolic acid, 3 to 8 per cent. in water containing glycerine, ℥ii, and alcohol, ℥i, to the pint, or a 1 to 2 per cent. solution of cocaine in equal parts of alcohol and water, or a solution of neutral acetate of lead in glycerine, or 1 per cent. yellow oxide of mercury ointment, or other antipruritic applications given under Pruritus.

La Perlèche.—See Perlèche.

Larva Migrans.—L. See Creeping Eruption.

Laundryman's Itch.—See Dhobie Itch.

Leishmaniasis, Dermal.—See Oriental Sore.

Lentigo.—See Freckles.

Lepothrix.—Gr. λέπος scale + θρίξ hair. See under Hair Diseases.

Leprosy.—*L. lep'ra;* Gr. λέπρα leprosy. A chronic, slowly progressive, infectious and contagious, endemic, constitutional disease, caused by the bacillus lepræ, which shows a predilection for cutaneous and nervous tissue, producing, in the cutaneous type of the disease, nodular and tubercular infiltration, necrosis, and ulceration, and in the nervous type, anæsthesia, atrophy and deformity, etc. The larynx, conjunctiva, bones, viscera, etc., may also become involved. A leprous ulceration on the nasal septum is sometimes an early sign of the disease, and the pharynx is often early involved. Febrile exacerbations associated with a patchy erythema occur at the onset. The bacilli are demonstrable in the secretions and in the lesions.

The disease occurs as well in cold countries, like Norway and Iceland, as in tropical and temperate countries.

Prognosis.—The disease usually terminates fatally in eight to twelve years or more, the anæsthetic type being the least virulent, the mixed type next, and the tubercular variety the gravest.

Treatment.—Lepers should be segregated in a non-leprous district and placed under the best hygienic conditions: open air life, fresh air at night, an abundance of nutritious food, with perhaps codliver oil, avoidance of chills, frequent hot baths, preferably sulphur baths (potassium sulphide, ℥ii–iv to thirty gallons of water).

Chaulmoogra oil (Oleum gynocardiæ), administered both internally and externally, is very beneficial, and sometimes curative; but it is apt to irritate the stomach. One may begin with three to five drops in capsule, emulsion, or milk, three times a day, before or after meals, preferably before meals according to Dyer, and increase the dose by one or two drops every three to five days, up to 75 to 120 to 150 or more drops t.i.d. At the same time give daily inunctions of the oil, in the strength of 25 to 50 per cent. in olive oil, cottonseed oil, cocoanut oil, or lard. Before each inunction, wash the skin with soap and hot water, and rub the oil into the lesions thoroughly for one or two hours. Crocker records the case of a leper who isolated himself in the mountains and succeeded in increasing the dose of chaulmoogra oil to 500 minims daily, and was cured. Good effects are observed, as a rule, only after large doses long continued. Strychnine or nux vomica (*q.v.* in Part 11) should also be given in all cases.

Less irritating to the stomach than the oil is magnesium or sodium gynocardate, gr. ss, gradually increased to gr. iii–xlv, in capsule, t.i.d.p.c.; or three to five grain capsules ten to twenty times daily.

J. T. McDonald reports many apparent cures from the ethyl esters of the fatty acids of chaulmoogra oil (Dean's derivatives) administered intramuscularly once weekly, beginning with 1 c.c. and increasing by 1 c.c. at every second or third injection, up to 2 to 6 c.c., according to the age and weight of the patient, with, at the same time, the oral administration of the mixed fatty acids in

capsule, beginning with 1/6 gm. per 100 lbs. of body weight, t.i.d., one or two hours after meals, increased every two weeks up to a maximum of 1 gm. per 100 lbs. of body weight per dose.

Other reputed remedies are as follows:

℞ Balsami gurjunæ (Gurjun oil) ..... ℥i (♏xv–x per dram)
Liquoris calcis vel mucilaginis acaciæ ..... ℥iii–v
Misce et fiat emulsum.

Sig.—One-half to two to four drams (5 to 10 + minims of the oil), two or three times daily. At the same time give daily inunctions of 25 to 50 per cent. of the oil in olive oil, for one to two hours at a time, into the lesions.

Hoang-nan, mercury, lepra serum, vaccine, tuberculin, Coley's fluid (see Part 11), nastin, salvarsan, snake venom, ichthyol, guaiacol, arsenic, potassium chlorate, and the salicylates are reputed to be of some value; but the list is suspiciously long.

The X-rays and radium are said to act favorably upon the skin lesions.

Unna recommends inunctions of chrysarobin and ichthyol, eight parts, salicylic acid two parts, and vaseline 100 parts, substituting pyrogallic acid for chrysarobin on the face.

Early radical removal of lesions, followed by cauterization, is said to arrest the disease. Ulcers should be kept cleansed with mild antiseptics, such as boric acid solution, ℥iv ad Oi, hydrogen peroxide half strength, or bichloride solution, 1 : 4000 to 2000, followed by a protective application, *e.g.*, balsam of Peru and castor-oil, equal parts. Cleanse the nose with an alkaline lotion, *e.g.*, sodium bicarbonate, ℥i ad Oi, followed by an oily spray, *e.g.*, liquid vaseline.

In the anæsthetic type, the application of electricity to the anæsthesic areas, and nerve stretching and nerve splitting "have been found useful in restoring sensibility, muscular power, and healing ulcers, and relieving pain." (Stelwagon.)

Treatment should be continued at intervals for years after the disappearance of all symptoms.

Leptus or Harvest Bug.—Gr. λεπτός slender. See Bites.

Leucoderma; Vitiligo; Piebald Skin.—Gr. λευκός white + δέρμα skin; L. *vitilig'o*, An acquired patchy depigmentation of the skin, characterized by the occurrence of very slowly progressive, milky-white patches, with convex borders surrounded by hyperpigmentation.

borders surrounded by hyperpigmentation.

Congenital leucoderma is called albinism (*q.v.*)

Etiology.—Possible causal influences are heredity, emotion, nerve injury, toxic neuritis, migraine, retinitis pigmentosa, pressure from a truss, etc., exophthalmic goitre, tabes, Addison's disease, exposure to the sun or to cold, morphœa, alopecia areata, syphilis, severe illness, hysterectomy, etc.

Treatment.—This is scarcely effectual. One may try local stimulation by means of mustard plasters or cantharides (*q.v.* in Part 11), or the negative electrode of a galvanic battery, with a current of two to five milliampères, applied for only one to several minutes.

The hyperpigmentation bordering the white spots may be rendered less conspicuous by the means used in the treatment of chloasma (*q.v.*).

Carbolic acid, pure or diluted with alcohol, may be painted on for this purpose.

The white patches on exposed parts may be masked by the application of dilute walnut juice, chrysarobin, or extremely weak tincture of iodine.

Leucoderma, Congenital.—L. *con*, with + *geñitus*, born. See Albinism.

Leuconychia.—Gr. λευκός white + ὄνυξ nail. See Atrophia Unguium, under Nail Dis.

Leucoplakia Buccalis.—Gr. λευκός white + πλαξ plate; L. *bucca*, cheek.

Synonyms.—Psoriasis linguæ; ichthyosis linguæ; smokers' patches.

A slow, persistent hyperkeratosis of the mucous membrane of the mouth, usually the tongue, characterized by the presence of somewhat thickened whitish lines, spots, or patches.

Cancerous degeneration sometimes follows.

Etiology.—Local irritation due to smoking, alcohol, hot, highly seasoned or acid foods, dental caries, or gastric or gastro-intestinal catarrh is a contributory cause.

Treatment.—Remove all possible sources of irritation, and keep the teeth, gums and mouth clean with brush, soap, and warm water, followed perhaps by an aqueous solution of boric acid, borax, or sodium bicarbonate, ℥iv ad Oi (gr. xv ad ℥i), or Dobell's solution (*q.v.* in Part 11). To destroy the hyperkeratotic patches, employ the galvanocautery boldly and thoroughly, or better, the X-rays (*q.v.*) or, better still, radium, using a filter (see under Eczema). Says Knox: "The employment of hard tubes and adequate filtration combined with frequent dosage, may lead to a rapid improvement in cases where no improvement had taken place under the lighter doses"; and "cases

which show no improvement are probably cancerous." The use of antiseptics, astringents, and chemical caustics is declared to be harmful. (Riesman; Pusey.)

Leukonychia.—Gr. λευκός white + ὄνυξ nail. See Atrophia Unguium, under Nail Diseases.

Lice.—See the Pediculoses.

Lichen Annularis (Galloway).—Gr. λειχήν lichen (papular skin disease); L. *aṅnulus*, ring. An extremely rare, chronic eruption, appearing upon the sides and back of the fingers, and characterized by an aggregation of lichen-planus-like papules or nodules into a ring, which enlarges peripherally while it clears centrally.

Treatment.—Galloway's case was cured in six months by the application of a 2 to 10 per cent. salicylic acid ointment, with iron and codliver oil (see Part 11) internally, and improved hygiene. Crocker recommends paraplast hydrargyri, containing mercury fifty parts, and carbolic acid, seventy-five parts (paraplast is a plaster-base of caoutchouc, lanolin, rosin, and dammar, a resin). Hyde recommends 50 per cent. aqueous solution of ichthyol.

Lichen Pilaris seu Spinulosus.—Gr. λειχήν lichen; L. *pil'us*, hair; *spiṅa*, spine. A rare, inflammatory papulation, occurring at the mouths of the hair follicles, each papule being capped by a horny spine.

Treatment.—The disease is readily cured, by thorough scrubbing with green soap and hot water. Crocker recommends that the following preparation be rubbed in with a piece of flannel, following the bath:

℞	Olei cadini	ʒi
	Linimenti saponis mollis,	
	Spiritus vini, aa, ad	ʒi

Codliver oil and iron, or arsenic are usually indicated (see Part 11).

Lichen Planus.—Gr. λειχήν *lichen* (papular skin disease); L. *plánus*, flat. An uncommon, chronic (rarely acute), inflammatory disease, characterized by pinhead to small pea-sized, flattened, glistening, firm, pale-red or violaceous papules with polygonal or angular outline, and often a slight central depression or umbilication, the papules tending to coalesce into patches with a roughened, slightly scaly surface. The sites of predilection of the eruption are the flexor surfaces of the wrists and forearms, the inner sides of the knees, and the lower parts of the legs, but any part of the body, including the buccal mucous membrane may become affected. The eruption is usually itchy, and is followed by pigmentation. Vesicles and blebs appear in rare instances.

Etiology.—Bile is almost invariably present in the urine (see Urinalysis in Part 1). Some form of gastric or duodenal derangement is possibly the underlying cause. Worry, overwork, deficient food, neurasthenia, etc., are cited as predisposing causes.

Prognosis.—Improvement under treatment is slow, but ultimate recovery, after several months, is the rule.

Treatment.—Prescribe a correct hygienic regimen, *e.g.*, adequate rest, fresh air day and night, regular hours of eating and sleeping, rest before and after meals, a well-balanced, nutritious ration, perhaps a glassful of hot water containing one-quarter teaspoonful of sodium bicarbonate one hour before each meal, regulation of the bowels, and perhaps codliver oil, quinine, and strychnine, as tonics. Of special value are arsenic and mercury used conjointly. Salicin is also recommended (see Part 11 for drug formulæ, etc.)

Locally, dab on twice daily or oftener if the itching demands it, compound tincture of coal tar (*q.v.*) or liquor carbonis detergens, diluted at first with ten to fifteen parts of water, and later gradually strengthened. Alkaline and bran baths (sodium bicarbonate ʒii–x, bran, one gallon, water, thirty gallons), every day or two, are very serviceable.

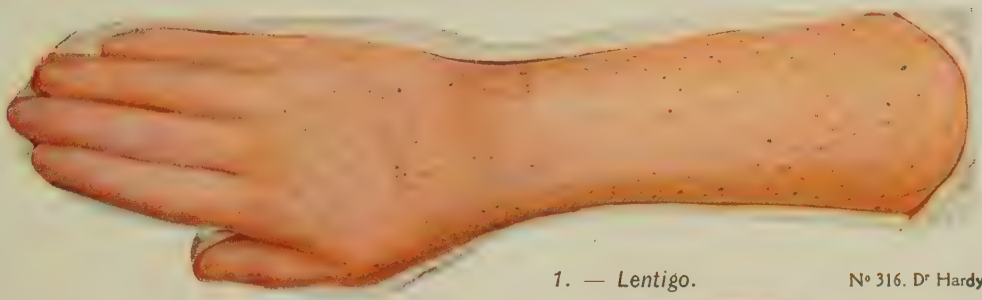
Other remedies are:

℞	Acidi carbolici	gr. xx
	Hydrargyri bichloridi	gr. ii–v
	Unguenti zinci oxidi	ʒi
		(Unna.)
℞	Olei rusci	♏xx
	Unguenti hydrargyri ammoniati	ʒi

For thick, hardened areas, apply salicylic acid ointment or rubber plaster, 10 to 20 per cent., continuously, until irritation is produced; then apply cold cream or zinc oxide ointment (*q.v.*).

"When the lesions are close together and patchy, the galvanic current of four to ten milliampères may be applied three or four times weekly. The application should be rapidly labile, except over thickened areas, where the electrodes can be held stationary for one to two minutes"; or the static current applied with the roller electrode, or the high-frequency current applied with the flat vacuum electrode may be employed (Stelwagon). The cautious application of the X-rays may be employed, as in eczema (*q.v.*).

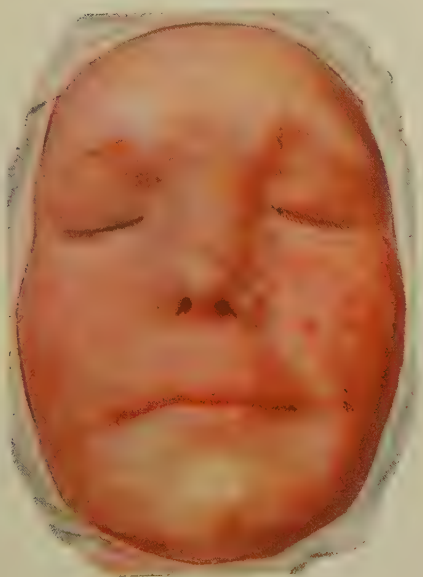
In acute inflammatory and in irritable cases, and in infants and children, use calamine-zinc-oxide lotion, together with the aforementioned baths:



1. — *Lentigo.* N° 316. Dr Hardy

2. — *Lichen planus of the hand.*
N° 1676. Dr Quinquaud.

3. — *Lichen planus of the foot.*



4. — *Lupus erythematosus.*
N° 1795. Dr Hallopeau.

5. — *Lichen simplex.*
N° 1452. Tenneson.

St. Louis Hospital Museum, Paris.

SKIN DISEASES : Lentigo. Lichen. Lupus.

℞ Calaminæ,
Zinci oxidi, aa ..... ʒii–iv
Acidi borici ..... ʒii
Glycerini ..... ♏x–xxx
Acidi carbolici ..... ♏xv–ʒi
Liquoris calcis ..... ʒii
Aquæ, q.s., ad ..... ʒviii

Lichen Ruber Acuminatus.—Gr. λειχήν lichen; L. *rúber*, red; L. *acuminat'us*, sharp-pointed. See Pityriasis Rubra Pilaris.

Lichen Scrofulosus.—Gr. λειχήν lichen (papular skin disease); L. *scrof'ula*, sow-pig. A chronic inflammatory disease, occurring mainly in tuberculous children, characterized by round, pinhead-sized, firm, flat, scaly, follicular papules, of a red color, fading to that of the normal skin, disposed in closely set groups and circles.

Treatment.—The daily administration of codliver oil (*q.v.* in Part 11), externally and internally, is rapidly curative. The oil must be rubbed in and kept constantly applied. Other oils are claimed to be equally efficient.

Lichen Spinulosus.—See Lichen Pilaris.

Tropicus.—Gr. λειχήν lichen; τροπικός turning. See Miliaria.

Urticatus.—L. *ur'tica*, a nettle. See Miliaria.

Variegatus.—See Parapsoriasis.

Lingual Affections.—L. *ling'ua*, tongue. See Tongue Diseases.

Linguopapillitis.—L. *ling'ua*, tongue; *papil'la*, nipple. See Glossitis, in Part 1.

Lip Diseases.—See Cheilitis Glandularis; Cheilitis Exfoliativa, under Dermatitis Seborrhœica; Perlèche; and Eczema.

Liver Spots.—See Chloasma; and Tinea Versicolor.

Loose Skin.—See Dermatolysis.

Lousiness.—See the Pediculoses.

Lupus Erythematosus.—L. *lúpus*, wolf; L.; Gr. ἐρύθημα redness. An uncommon, chronic, inflammatory disease of adults, showing a predilection for the cheeks and dorsum of the nose (butterfly disease), the eartips and scalp, and characterized by superficial, pink to red, discoid, sharply circumscribed, dry scaly patches, with a tendency to atrophic scarring. The presence of gaping follicles plugged with sebum is a characteristic. The disease may even occur in the mouth.

Etiology.—The following are possible causal factors *e.g.*, nephritis, gout, dyspepsia, anæmia, constipation, uterine disease, tuberculosis, debility, neurasthenia, feeble peripheral circulation, exposure to extreme heat or cold, inflammatory skin diseases.

Prognosis.—This is unfavorable as to cure, but benefit can be expected from judicious treatment.

Treatment.—Attend to any possible etiological influence, and enjoin the observance of a correct hygienic regimen, *e.g.*, adequate rest and exercise, fresh air day and night, avoiding draughts, a daily tepid bath in a comfortable room, before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, rest before and after meals, an abundance of milk, cream, and other fatty foods (Sequeira), regulation of the bowels, and the avoidance of anything which tends to flush the face, such as alcohol, tea, coffee, tobacco, hot, rich soups, constipation, exposure to sun or wind, stooping, and great exertion. A warm, dry climate is best. Codliver oil (see Part 11) and tonics are often useful. The salicylates, gr. x-xx, t.i.d., well diluted and quinine, beginning with gr. iii-v, t.i.d. and increasing to double the amount, are especially recommended, particularly quinine.

In the local treatment, the mildest measures are the best recommended, since irritating measures are likely to make the disease spread. Once daily the affected parts may be washed with green soap and warm water, and one of the following mild astringent preparations applied frequently:

℞ Calaminæ,
Zinci oxidi, aa ..... ʒii
Acidi borici ..... ʒi
Glycerini ..... ♏xxx
Acidi carbolici ..... ♏x
Liquoris calcis ..... ʒi
Aquæ, q.s., ad ..... ʒiv
(Calamine lotion.)

℞ Calaminæ,
Zinci oxidi, aa ..... ʒss
Liquoris calcis,
Olei olivæ, aa ..... ʒiv
Acidi carbolici ..... ♏iii–v
Adipis lanæ hydrosi ..... ʒi
(Calamine liniment.)

℞ Zinci sulphatis,
Potassii sulphureti, aa ..... gr. v–xv
Glycerini ..... ♏viii
Aquæ ..... ʒiv

℞ Sulphuris præcipitati ..... ʒss–i
Petrolati mollis ..... ʒi

Should these preparations prove ineffectual, stronger applications may be cautiously made to limited areas. Every seven to ten days, liquor potassæ (*q.v.*), pure or diluted, may be applied, allowed to dry, then covered with several coats of collodion, and allowed to remain on for two or three days. More active measures are (1) vigorous scrubbing with green soap; (2) painting with pure liquid carbolic acid about every seven to ten days, waiting each time until the film-like crust formed has fallen off; (3)

painting every day or two for several days with salicylic acid, gr. xx–lx, to collodion, ʒi and repeating the paintings after the previous film has fallen off; (4) the application twice daily of pyrogallic acid, ʒi, to petrolatum, ʒi.

When irritation has been produced by these applications, replace them for a time by such soothing applications as cold cream boric ointment, or calamine lotion.

Other measures which are sometimes successful are (1) the application of the X-rays (*q.v.*), pushed to the point of producing a mild erythema; (2) radium (*q.v.*) applied on a flat applicator for about half an hour; (3) ultra-violet or Finsen light; (4) the high frequency current, using a flat, hammer-shaped, vacuum electrode, applied at a distance of ⅛ to ½ inch, for three to ten minutes, or "sufficiently long to bring about some reaction," and "repeated every five to ten days, using the calamine-zinc-oxide lotion in the intervals" (Stelwagon); "applied daily or every other day." (Pusey.)

Pusey thinks that freezing with solidified carbon dioxide or liquid air is the most effective treatment. He freezes the patches for ten to twenty seconds (it may even be continued for sixty seconds) at intervals of at least three weeks.

Lupus Verrucosa.—L. *lu'pus*, wolf; *verrúca*, wart. See Tuberculosis Cutis.

Lupus Vulgaris.—L. *lupus*, wolf; *vulga'ris*, common. A chronic, painless, granulomatous disease of the skin and mucous membranes, caused by the tubercle bacillus, and characterized by the appearance of brownish-red or apple-butter colored nodules or tubercles and infiltrated patches, which either ulcerate or atrophy, leaving scars and disfigurement. Under pressure with glass, yellow spots are visible. A positive diagnosis is made by microscopic examination and animal inoculation (see Tuberculosis, Pulmonary, in Part 1).

The disease usually begins in early life. It is rare in the New World, but common in Europe.

Prognosis.—The disease is rebellious to treatment, but usually responds eventually if the latter is persisted in. Recurrence, however, is common. X-ray treatment is effectual.

Treatment.—A correct hygienic regimen is of the first importance. This embraces adequate rest and exercise, fresh air day and night, regular hours of eating and sleeping, rest before and after meals, and an abundant, nutritious diet, with perhaps codliver oil and tonics (see Tuberculosis, Pulmonary, in Part 1, for details). Thyroid extract (*q.v.* in Part 11) is well recommended, as is also tuberculin (see Part 1).

The best local treatment is with the X-rays, (*q.v.*), radium, (*q.v.*), or the Finsen ultraviolet rays, better the X-rays or radium. The ultraviolet rays are not of use where there is ulceration, or in lupus of the mucous membranes.

Give a full massive dose of the X-ray, to produce more than a mild erythema, and repeat once or twice, after an interval of three or four weeks. For deep lesions, employ rays of greater penetration and intensity through a filter.

While employing radiotherapy, ulcers should be daily cleansed with mild antiseptics, such as boric acid solution, ʒiv ad Oi, or bichloride, 1 : 4000 to 2000, and continuous wet dressings applied; or perhaps an ointment of iodoform, or ammoniated mercury, or carbolic acid (see Part 11) may be deemed preferable. Where there is an associated acute inflammation, calamine-zinc-oxide lotion may be applied until the inflammation subsides:

℞ Calaminæ,
Zinci oxidi, aa ..... ʒi–ii
Acidi borici ..... ʒi
Glycerini ..... ♏xxx
Acidi carbolici ..... ♏x
Liquoris calcis ..... ʒi
Aquæ, q.s., ad ..... ʒiv

Where röntgenotherapy and phototherapy are not available, or sometimes as an adjuvant to radiotherapy, the following destructive treatment with caustics may be employed:

(1) ℞ Pyrogallol ..... ʒii–iii
Petrolati mollis et resinæ ceratæ, aa, q.s., ad ..... ʒi

Apply this closely on lint, and renew twice daily, each time wiping off gently any loose skin, scale, or slough. At the end of five to eight days, apply poultices for several hours to a day or longer, to soften and remove the slough that has formed. Then gently wash with soap and water, rinse and wipe dry, and reapply the ointment, and so on until the destructive action has been deemed sufficient. This requires ten days to two or three weeks. After removing the final slough, apply an ointment of pyrogallol, 1 to 2 per cent., until healing takes place. (Stelwagon.)

(2) Paint on a 20 per cent. solution of cocaine in order to benumb the cutaneous sensibility. Then apply on lint as much salicylic acid added to glycerine as will

make a paste. To this, creosote or carbolic acid, ℥ss to the ounce, may be added to lessen the pain. Change daily, until an acute inflammatory reaction is produced, then use bland dressings until the reaction subsides.

(3) ℞ Hydrargyri perchloridi..... gr. i–ii
Aquæ vel petrolati..... ℥i

M. Sig.—Apply continuously until an acute reaction is produced. (White.)

(4) ℞ Collodii acidi salicylici, 10 to 20 per cent..... ℥i

Sig.—Apply continuously until an acute reaction is produced.

(5) ℞ Acidi salicylici vel resorcinolis..... ℥ii–iii
Petrolati..... ℥i

Sig.—Apply continuously until an acute reaction is produced.

(6) ℞ Acidi arsenosi..... gr. xx
Cinnabaris..... ℥i
Cocainæ chloridi..... gr. v–x
Petrolati mollis..... ℥i

Apply thickly upon lint, cover with wax tissue, and bind on. Change twice daily. Continue two to four days. Then poultice until the slough comes away, and then apply a 1 to 2 per cent. pyrogallol salve until healing occurs. Considerable inflammatory œdema follows this treatment. (Stelwagon.)

(7) To ulcers, lactic acid may be applied on a wad of cotton for ten to thirty minutes once or twice daily, using boric ointment in the intervals. (Stelwagon.)

Operative Measures.—(1) Thorough curettement, under general anæsthesia, with a small, sharp spoon, looking well after the edges, followed by the application of pure carbolic acid, or of a 25 per cent. pyrogallol salve for several days, as described under caustic measures. Crocker recommends that thyroid extract (*q.v.* in Part 11) be administered after curetting, and that recurrent nodules be bored out with a matchstick dipped in fuming acid nitrate of mercury.

(2) Linear scarification under general anæsthesia, by means of close parallel incisions, ⅛ to ⅙ inch apart, down through the diseased tissue, cross-tracked, if deemed advisable, the aim being to cut off the blood supply. Apply immediately boroglyceride, further to deplete the tissues. In operating on the nose, plug the nares to secure a firm foundation. Repeat the scarification at intervals of one to two weeks.

Ionic medication (*q.v.* in Part 1) is recommended. First rub the affected parts with a pledget of cotton-wool soaked in liquor potassæ, in order to denude the nodules of their epithelial covering. Then wipe dry, and ionize, using a 2 per cent. solution of zinc chloride or 10 per cent. zinc sulphate and a current of two to three milliampères per square centimetre for ten to twenty minutes. Repeat the treatment every two weeks until all nodules have disappeared. It is also directed that thirty to forty grains of potassium iodide be given by mouth, followed one and a half to two hours later by the introduction into the nodules of an anodic platinum or iridium needle, and the passage of a current of three to four milliamperès for three minutes. Free iodine is liberated around the needle.

For thickened scars employ repeated linear scarification followed by the application of a mercurial plaster. Injections of thiosinamin, 15 per cent. alcoholic solution, ♏iv, increasing to ♏xv, every two or three days, may also be tried.

(For treatment of lupus of the mucous membranes, see Lupus of the Nose and Throat, in Part 9)

Lymphangiectodes.—L. *lymp'ha*, lymph + Gr. *ἀγγεῖον* vessel + *ἔκτασις* dilatation. See Lymphangioma Circumscriptum, following.

Lymphangioma Circumscriptum; Lymphangiectodes.—L. *lymp'ha*, lymph + Gr. *ἀγγεῖον* vessel + *-ωμα* tumor; *ἔκτασις* dilatation; L. *circum*, around + *scrib'ere*, to write. A rare, circumscribed proliferation of lymphatic vessels, analogous to a vascular nævus, beginning usually in early life, and characterized by an aggregation of closely crowded, yellowish or reddish, pinhead to small pea-sized, tough vesicles containing lymph, and resembling somewhat frog-spawn.

Treatment.—Remove immediately by a wide excision, by cauterization, or by the curette, or employ radium or the X-rays (*q.v.*), or treat each vesicle separately by electrolysis (see Adenoma Sebaceum). Surgical removal should be complete, otherwise recurrence is almost certain. Skinner recommends deep röntgenotherapy in massive doses, using only about two millimetres of aluminum filtration, with a lead mask adapted to the lesion, or conical protection tube, and repeating the treatments at about two-month intervals.

Lymphangitis.—See Part 1, General Medicine and Surgery.

Madura Foot.—See Mycetoma.

Malabar Ulcer.—See Phagedena Tropica.

Malignant Œdema.—L. *malignans*, virulent; Gr. *οἴδημα* swelling. See Anthrax.

Pustule.—L. *pustula*. See Anthrax.

Measles.—See Part 1, General Medicine and Surgery.

Measles, German.—See Part 1.

Melanoderma.—Gr. *μέλας* black + *δέρμα* skin. See Chloasma.

Miliaria—L. *milium*, millet. **Synonyms.**—Miliaria rubra; strophulus; lichen tropicus; lichen urticatus; erythema infantum; red gum; prickly heat; heat-rash; gum or teething rash.

A common acute eruption of mildly inflammatory, pinpoint to pinhead-sized, closely crowded vesicles and papules, at the mouths of the sweat follicles, accompanied by burning, prickling, or itching, and lasting from several days to several weeks.

It is caused by exposure to high temperature.

Treatment.—Bathe the affected skin with dilute alcohol, followed by a bland dusting powder, such as equal parts of boric acid, zinc oxide, talcum, and starch; or if there is much irritation, by one of the following lotions:

℞ Calaminæ,
Zinci oxidi, aa ..... ℥ii
Acidi borici ..... ℥i
Glycerini ..... ♏x–xxx
Acidi carbolici ..... ♏x–xxx
Liquoris calcis ..... ℥i
Aquæ, q.s., ad ..... ℥iv

M. Sig.—Shake well, and dab on as often as desired to relieve irritation.

℞ Thymolis ..... gr. v
Sodii boratis ..... gr. iv
Alcoholis ..... ℥iv
Aquæ, q.s., ad ..... ℥iv

Prophylaxis.—Avoid alcoholic drinks and overclothing. Woolen underclothing is preferable to cotton, says Crocker. Silk or linen is, no doubt, best. The diet should be light, and the bowels should be kept regular. In infants, restrict carbohydrates; forbid bananas, potatoes, and sweets. Bathe frequently, followed by an alcohol rub and a bland dusting powder.

Miliaria Rubra.—L. *ru'ber*, red. See Miliaria, above.

Milium.—L. *milium*, millet-seed. A pinhead-sized or larger, whitish or yellowish, pearly, sebaceous retention tumor, without an aperture or duct, situated just beneath the epidermis, and occurring principally about the eyelids, cheeks, and forehead, more rarely on the genitals. It sometimes consists of embryonic epithelial remnants instead of inspissated sebum.

Treatment.—In infants and children, the free use of soap and water, and the occasional inunction of unguentum sulphuris præcipitati, gr. xx–xl ad ℥i, usually suffices to effect a cure.

In adults, the milia should be incised, their contents squeezed out, and the interior touched with carbolic acid or tincture of iodine on the end of a probe; or electrolysis may be employed (see Adenoma Sebaceum). Where the lesions are numerous and closely crowded, one may try a peeling paste (see under Acne Vulgaris).

Milium, Colloid.—See Colloid Degeneration of the Skin.

Milk-Crust.—See Dermatitis Seborrhœica.

Leg.—See Thrombosis, in Part 1.

Möller's Glossitis.—See Glossodynia Exfoliativa.

Moist Wart.—See Verruca.

Mole.—L. *mol'es*. See Nævus Pigmentosus.

Molluscum Contagiosum.—L. *molluścum*, soft; *cantag'io*, contact infection. An uncommon, contagious disease, occurring commonly on the face, breasts, or genitals, characterized by pinhead to pea-sized or larger, pinkish or pearly white, waxy, firm, rounded, globular or somewhat flattened epithelial tumors, with a central umbilicated opening filled with a cheesy debris.

Turkish baths and birds and domestic fowls are frequent sources of infection.

The disease is readily cured.

Treatment.—Incise each tumor completely (unless it is small, when an incision may not be necessary), press out the contents between the thumb nail and the handle of the scalpel, and touch the cavity with the end of a wooden toothpick dipped in pure carbolic acid, tincture of iodine, strong silver nitrate, or liquor hydrargyri nitratis, (*q.v.* in Part 11), or use the solid silver stick. Pedunculated lesions may be snipped off with scissors or grasped with mouse-tooth forceps and cut off with a sharp scalpel, and the base cauterized. With small lesions, and in children, the following ointment may be rubbed in vigorously once or twice daily:

℞ Hydrargyri ammoniati, seu sulphurus præcipitati ..... gr. xx–xl
Petrolati ..... ℥i
(Stelwagon.)

Monilithrix.—L. *monile*, necklace + Gr. *θρίξ* hair. See Hair Diseases.

Morphœa.—Gr. *μορφή* form. Localized Scleroderms, see Scleroderma.

Morvan's Disease.—See Syringomyelia, in Part 1.

Mosquito Bites.—See Bites.

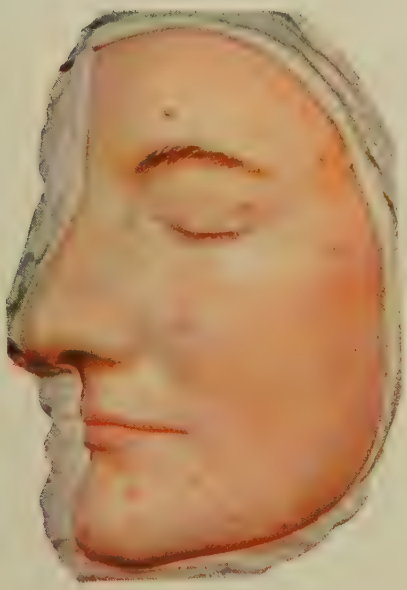
Mother's Mark.—See Nævus Pigmentosus; and Nævus Vascularis.

Multiple, Benign, Cystic Epithelioma.—See Epithelioma, Multiple, Benign, Cystic.

Mycetoma; Madura Foot.—Gr. *μύκης* fungus + *-ωμα* tumor. A slow, chronic, tropical

1. — *Vascular nævus.*
N° 2588. Dr Danlos.

2. — *Same face* (after radium treatment).
N° 2597. Dr Danlos



3. — *Molluscum contagiosum* (varioliform acne).
N° 774. Dr Ollivier.

4. — *Nævus* (from life).

5. — *Vascular nævi.*
N° 1772. Dr Gaucher.
St. Louis Hospital Museum, Paris.

and subtropical, endemic disease, chiefly of India, commonly involving the foot, occasionally the hand, caused by the streptothrix (or actinomyces) Maduræ fungus, and characterized by swelling and the formation of indolent nodules in the skin and subcutaneous tissues, which break down with the formation of sinuses. There is a black variety which discharges gunpowder-like granules, a yellow variety which discharges pale yellowish fish-roe-like granules, and a rare red variety, which discharges cayenne-pepper-like granules.

Treatment.—Remove every trace of the disease with the knife, followed, perhaps, by Carrel's method of treating infected wounds (*q.v.* in Part 1). In advanced cases, amputation well above the diseased part is the only recourse. Potassium iodide is of no avail.

Mycosis Fungoides.—Gr. *μύκης* fungus; L. *fuńgus* + Gr. *εἶδος* form; shaped like a toadstool. A chronic, malignant disease of the skin, characterized in the beginning by numerous areas of circumscribed erythematous, eczematous, urticarial, psoriatic, or erysipelatous dermatitis, with usually intense itching (sometimes absent), followed after a period of months or years, by the appearance of pinkish or reddish, elevated, irregular nodules and plates, which later become fungoidal or mushroom-like and ulcerate.

The disease has been almost invariably fatal within a few months to fifteen years.

Treatment.—Arsenic (*q.v.* in Part 11), erysipelas, and apparently continued purgation are reported to have cured cases. Coley's mixed toxines of erysipelas and bacillus prodigiosus (*q.v.*) may be tried. The thorough use of the X-rays (*q.v.*) produces a symptomatic, possibly a permanent cure. It also relieves the intense itching.

Myringomycosis; Otomycosis.—L. *myrińga*, drum-membrane; Gr. *μύκης* fungus; *οὖς* ear. See Ear Diseases, Part 7.

Nævus Anæmicus.—L. *nævʹus*, mask; Gr. *ἀν* neg. + *αἷμα* blood. A rare, congenital, sometimes acquired affection of the skin, characterized by the presence of small white spots, resembling those of albinismus partialis, which are rendered distinct by any agency that causes flushing of the skin, *e.g.*, blushing, friction, cold, heat, or exertion. Hairs of the same color as elsewhere are present over the affected skin, which appears like normal skin, except for the color. Sensation is normal. Firm pressure with a glass causes the spots to disappear, indicating no lack of pigment as in albinismus or leucoderma. The condition has not yet been conclusively explained. It is apparently of no pathological significance.

Nævus Pigmentosus; Mole.—L. *Nævʹus*, mask; *pigmeńtum*, paint; *molʹes*, fleshy mass. Nævus pigmentosus includes the simple pigmented smooth spot (nævus spilus—Gr. *σπίλος* spot), the hairy mole (nævus pilosus—L. *pilʹus*, hair), the mammillated or warty mole (nævus verrucosus—L. *verrúca*, wart; nævus papillomatosus—L. *papilʹla*, nipple), and the type with excessive fat and connective tissue hypertrophy (nævus lipomatodes—Gr. *λίπος* fat + *-ωμα* tumor). Some nævi are linear and horny. They are usually congenital. They sometimes develop into malignant melanotic tumors.

Histologically, a pigmented mole consists of an increase of pigment, with usually a hyperplasia of the other skin elements.

Treatment.—Complete excision is ordinarily the best method of removing moles. They may be picked up with toothed forceps and snipped off below their base with a sharp knife, a fine silk suture being then inserted, if necessary. Local anæsthesia is superfluous. Where excision may leave too disfiguring a scar, the growth may be thoroughly frozen with carbon dioxide snow or liquid air. The X-rays or radium (*q.v.*) may also be employed. Caustics are effectual, *e.g.*, tri-chloracetic acid, glacial acetic acid, or nitric acid, applied in a thin coating to the surface, or by stippling.

Nævus Lipomatodes.—See Nævus Pigmentosus, above.

Papillomatosus.—See Nævus Pigmentosus.

Pilosus.—See Nævus Pigmentosus.

Spider.—See Telangiectasis.

Spilus.—See Nævus Pigmentosus.

Nævus Vascularis.—L. *nævʹus*, mask; *vaśculum*, vessel. Nævus vascularis is a congenital, circumscribed, cutaneous, vascular hyperplasia, consisting of anastomosing, dilated capillaries. It includes the flat, superficial "port-wine mark," the hypertrophic nævus made up of large dilated vessels, and the steadily growing, globular angioma cavernosum containing large blood spaces.

Treatment.—The following methods are available:

(1) Excision, if the nævus is not too large, followed, if necessary, by Thiersch skin grafts.

(2) Compression of the growth by means of thick and repeated paintings with collodion, continued for a few weeks or longer, with which may be combined punctures, ⅛ to ¼ inch apart, with a triangular-edged

or cataract needle, followed immediately by several coatings of collodion; applicable only in infants under two or three months of age, during which period there is a tendency to spontaneous disappearance.

(3) Punctures, ⅛ to ¼ inch apart, with a needle or wooden toothpick dipped in carbolic or nitric acid, followed by compression; applicable for superficial lesions.

(4) Electrolysis. An anæsthetic is usually required. The needle, coated with shellac or gutta percha up to within ⅛ inch of the point, is attached to the negative or positive electrode (if the latter, it should be of gold or irido-platinum), and the other electrode, covered with a wet sponge, is applied to any convenient part of the body. A current of from one to three to five or more milliampères, depending upon the size of the growth is used (up to ten to twenty milliampères for hypertrophic growths). Make parallel, slanting punctures, ⅛ to ¼ inch apart, down to the base of the growth, and allow the current to act for one-half to two or three minutes, (seconds?), or until a blanched line is produced in its course. Always increase and break off the current slowly in operating about the head, so as to avoid dizziness, etc. The needle may also be inserted at ⅛ to ¼ inch intervals, just at or outside the edge of the growth, or if the growth is small, it may be inserted at the centre, thrust slantingly toward the edge, allowed to act, then almost completely withdrawn and thrust in another direction, and so on. Apply pressure for several hours or longer after the treatment and repeat the treatment every one to three weeks. (Stelwagon.)

(5) Thorough freezing with solid carbon dioxide or liquid air, perhaps the best method of treatment. (Fordyce; Pusey).

(6) Deep röntgentherapy in massive doses, using only about two millimetres of aluminum filtration, with a lead mask adapted to the lesion and conical protection tube, and repeating the treatments at about two-month intervals (Skinner). Stelwagon says the exposures should be pushed to the point of producing a moderate dermatitis.

(7) Radium therapy (*q.v.*).

(8) Puncturing with the galvanocautery needle, combined with pressure.

(9) Passage through the tumor of several aseptic silk sutures saturated with a solution of perchloride of iron. "The iron coagulates the blood, and the threads act as nuclei for the clot formations." (Adam Politzer.)

Nævus Verrucosus.—See Nævus Pigmentosus.

Nail Diseases.—**I. Atrophia Unguium.**; Gr. *a* priv. + *τροφή* nutrition; L. *ung'uis*, nail).—Thinness and brittleness of the nails (onychorrhexis—Gr. *ὄνυξ* nail + *ῥῆξις* fracture) occurs in glossy skin, gout, syphilis, and leprosy.

Opaqueness and lack of lustre, sometimes associated with a worm eaten appearance, may be congenital, or may occur with various inflammatory and squamous skin diseases or constitutional disturbances.

Transverse furrows occur in fevers, local asphyxia, etc.

Spoon-shaped nails occur in wasting diseases, etc.

The nails may become friable and crumbly in nervous diseases, possibly traumatism, poor health, chronic indigestion, and favus or ring-worm of the nail.

The nails may be shed in acute infectious diseases, syphilis, diabetes mellitus, locomotor ataxia, section of the sciatic nerve, alopecia areata, hysteria, pemphigus foliaceous, epidermolysis bullosa, impetigo herpetiformis, dermatitis exfoliativa, scarlatinaform erythema, annual keratolysis. The tendency may be congenital or hereditary.

White spots (leukonychia—Gr. *λευκός* white + *ὄνυξ* nail) may follow fevers or nervous disorders, or the use of the cuticle knife, or other form of traumatism.

TREATMENT.—Treat the underlying cause. If this is not apparent, arsenic and codliver oil, or precipitated sulphur, gr. ii–iii, t.i.d. may be tried empirically (see Part 11). Boric ointment may be applied locally. In nail-splitting, keep the nail closely filed and enveloped in vaseline and a finger-cot. White spots may be concealed by touching them with a 5 to 10 per cent. resorcin lotion. For ring-worm and favus atrophy, see VIII, p. 615—Onychomycosis.

II. Callosity of the Matrix (L. *call'us*, insensibility).—See XI, p. 615—Tylosis.

III. Hypertrophia Unguium; Onychauxis.—Gr. *ὑπέρ* over + *τροφή* nutrition; L. *uñguis*, nail; Gr. *ὄνυξ* nail + *αὐ'ξειν* to increase.—CAUSES.—Congenital anomaly, chronic pulmonary and cardiac disease, tuberculosis, ring-worm and favus, pressure and warmth, lack of care, gout, rheumatism, leprosy, acromegaly, syringomyelia and other nervous diseases, psoriasis, eczema, dermatitis exfoliativa, pityriasis rubra pilaris, ichthyosis.

TREATMENT.—Treat the underlying cause. Arsenic (*q.v.* in Part 11) is recommended. The nail may be softened by soaking in hot sodium bicarbonate or biborate solution, or by the use of salicylated vaseline, gr. xx–lx ad ℥i, and the overgrowth pared or filed away, and

subsequently kept down with a fine file. "Shoemaker highly recommends an ointment of oleate of tin, from twenty to sixty grains to the ounce of lard" (Pusey). Onychogryphosis (Gr. ὀ'νυξ nail + γρύπωσις bending: claw or ram's horn deformity) has been cured in eighteen sittings, by burning away all the abnormal accumulation by insinuating a flat platinum knife of a Paquelin cautery under the nail (Author?).

IV. Leukonychia.—Gr. λευκός white + ὀ'νυξ nail. See under I, Atrophia Unguium.

V. Onychia; Onychitis; Paronychia. Gr. ὀ'νυξ nail + -ιτις inflammation; παρά near or beside: run-around).—Acute or chronic inflammation of the nail matrix, due to traumatism, pyogenic infection, syphilis, tuberculosis. Sabouraud says that staphylococcic onychosis is always due to inoculation from the saliva by biting the nails.

Treatment.—Sterilize the parts with tincture of iodine, and under cocaine anæsthesia, 0.1 per cent., injected just beneath the epidermis, make a dorsal, median longitudinal incision, or perhaps better, a lateral or bilateral longitudinal incision (Kanavel) as shown in Fig. 96, through the skin over-

Fig. 96.—Lateral incisions in paronychia (Kanavel).

lying the base of the nail, down to the nail. Elevate the flap of cuticle, and cut off as much of the root of the nail as may have become separated from its matrix, leaving the distal portion of the nail still attached. Then insert thin strips of gauze wet with boric acid solution, ʒiv ad Oi, or bichloride solution, 1 : 4000 to 2000, and soak the member for an hour in the hot solution; or else use dry gauze packing daily until healing occurs.

Röntgenotherapy (*q.v.*) may be of service in chronic cases.

Morrow and Lee report the cure of chronic cases of paronychia in from one to three weeks, by swabbing the affected area beneath the plica unguium with a saturated solution of chrysarobin in chloroform once daily until there is no longer any pus formation.

VI. Onychauxis.—See III, Hypertrophia Unguium.

VII. Onychogryphosis.—See III, under Hypertrophia Unguium.

VIII. Onychomycosis.—Gr. ὀ'νυξ nail + μύκης fungus. A grayish, friable condition of the nail, caused by the ring-worm orfavus fungus. The diagnosis is made by a microscopic examination of the scrapings after soaking the latter in liquor potassæ for one-quarter of an hour to twenty hours.

Treatment.—This should be persistent; several months are required for a cure. First avulse the nail, or scrape it well, and then soften and dissolve it for about fifteen minutes with liquor potassæ. Then apply on lint, under oiled silk or a rubber finger stall, an alcoholic solution of bichloride of mercury, gr. i–iv to the ounce, or a solution of sodium hyposulphite, ʒii to the ounce, or iodine, gr. ii, and potassium iodide, gr. iv to the ounce. The hyposulphite solution may be used when the others cause irritation. The treatment should be repeated daily.

Röntgenotherapy is effectual.

IX. Onychorrhexis.—See I, Atrophia Unguium.

X. Paronychia.—See Onychia.

XI. Tylosis.—Gr. τύλωσις callosity; Callosity of the Matrix. Split the nail, or avulse it, and remove the callus.

Natal Boil.—See Oriental Sore.

Nettlerash.—See Urticaria.

Neuralgia, Red, of the Extremities.—See Erythromelalgia.

Neuralgia of the Skin; Dermatalgia.—Gr. νεῦρον nerve; δέρμα skin; ἀ'λγος pain. **Causes.**—Exposure to cold, rheumatism, gout, chlorosis, hysteria, neuritis, malaria, syphilis, diabetes, locomotor ataxia, and other central nervous diseases, etc. (see Neuralgia in Part 1).

Treatment.—Treat the underlying cause. Palliative and remedial local measures include the light application of the Paquelin cautery, blisters (see Part 11, Cantharides), heat, unguentum mentholis (*q.v.*) or the menthol cone, tincture of iodine, tincture of aconite, dilute tincture of belladonna, the liniments of belladonna, chloroform, and turpentine (see Part 11), methyl salicylate, camphor and chloral, sprays of ether and ethyl and methyl chloride, galvanism, etc. (see Neuralgia, in Part 1). Applications may be made over the painful area, or over the spinal centre from which the affected nerve arises.

Analgesic drugs include aspirin, salicylates, phenacetin, antipyrine, quinine, etc. (see Part 11 for formulæ, etc.).

The pain usually disappears spontaneously in several weeks.

Neurofibroma.—See Fibroma.

Neuroma of the Skin.—Gr. νεῦρον nerve + -ωμα tumor. The exceedingly rare occurrence of a single, or usually multiple, pinhead to pea-sized or larger, movable or immovable, firm, sensitive, sometimes painful fibrous tumors containing nerve elements.

Neuromata occur sometimes in amputation scars.

Treatment.—Individual tumors may be excised. In multiple cases, one may resect a portion of the nerve supply.

Nevus.—See Nævus.

Nocardiosis.—See Actinomycosis.

Œdema.—Gr. *οἴδημα* swelling. See Part 1.

Angioneurotic.—See Angioneurotic Œdema.

Malignant.—See Anthrax.

Œdema Neonatorum.—Gr. *οἴδημα* swelling; *νέος* new + L. *na'tus*, born. This condition develops in the first few days of life, and begins almost invariably in the legs. The skin pits on pressure.

Etiological influences include premature birth, cardiac weakness, atelectasis, nephritis, hereditary syphilis, erysipelas, infectious diseases, exposure to cold immediately after birth, incomplete establishment of respiration, possibly too early ligation of the cord, ill-nourished mother. Most cases die.

The treatment is the same as that of sclerema neonatorum (*q.v.*).

Ogo.—See Gangosa.

Oidiomycosis.—L. *oïdium*, dim. of Gr. *ᾠόν* egg + *μύκης* fungus. See Blastomycosis.

Onychauxis.—Gr. *ὄνυξ* nail + *ἀύξειν* to increase. See under Nail Diseases.

Onychia; Onychitis.—Gr. *ὄνυξ* nail + *-ιτις* inflammation. See under Nail Diseases.

Onychogryphosis.—Gr. *ὄνυξ* nail + *γρύπωσις* bending. See under Nail Diseases.

Onychomycosis.—Gr. *ὄνυξ* nail + *μύκης* fungus. See under Nail Diseases.

Onychorrhexis.—Gr. *ὄνυξ* nail + *ῥῆξις* fracture. See under Nail Diseases.

Oriental Sore or Boil; Dermal Leishmaniasis.—A tropical, endemic, local, contagious, auto-inoculable, slow, indolent disease, due to the Leishmania Tropicum (similar to the Leishmania Donovani; see Kala-Azar, in Part 1), occurring chiefly on the face and other uncovered parts, and characterized by the successive formation of an inflammatory papule, tubercle, scab, and under the latter, a sharply punched-out ulcer. The Central and South American sore is characterized by granulomatous lesions of the nose and mouth (resembling syphilis, tuberculosis, or leprosy: Forest Yaws) associated with lymphadenitis.

Treatment.—This is effectual. The beginning lesions may be excised, or treated with tincture of iodine or unguentum hydrargyri (*q.v.* in Part 11) or methylene blue, lanolin and vaseline, aa. In older lesions, curettement, followed by cauterization with the actual cautery, silver nitrate, tincture of iodine, or pure carbolic acid, neutralized with alcohol, may be practiced. Thereafter the ulcer should be sprayed forcibly once or twice daily with hot boiled water or boric acid solution, ℥iv ad Oi, followed by the application of sterile, dry gauze, or powdered boric acid, or iodoform.

Röntgenotherapy and ionization (*q.v.*) may be tried. The internal administration of quinine or arsenic is recommended; also tartar emetic intravenously (see Leishmaniasis in Part 1). It is stated that as many as 200 injections may be required to effect a cure.

Paget's Disease.—See Carcinoma Cutis.

Papilloma.—L. *papil'la*, nipple + Gr. *-ωμα* tumor. See Verruca.

Parakeratosis Variegata.—Gr. *παρά* beside + *κέρας* horn. See Parapsoriasis.

Parapsoriasis.—Gr. *παρά* aside + Psoriasis. A very rare, chronic, exceedingly resistant, generalized eruption, first described by Brocq in 1912, of which three types are recognized:

(1) "Parapsoriasis en gouttes, which appears as pinhead to lentil-sized, pale red or reddish-brown papules, which are slightly infiltrated and covered with a dry, slightly adherent scale. Removal of the scales leaves a fine purpura, without bleeding points. By other writers this type has been called 'dermatitis psoriaformis nodularis' and 'pityriasis lichenoides chronica.'"

(2) "Parapsoriasis *lichénoïde*, which is differentiated from the former type by the more marked papular character, by more infiltration, and by less scale formation. The papules have a tendency toward central depression and resemble the lichen papule. They are disseminated or grouped in a network on the trunk or extremities. This form is also described as 'parakeratosis variegata' and 'lichen variegatus.'" Stelwagon describes it as a pinkish yellow to purplish, maculo-papular, slightly scaly condition of the skin, with a reticular or marble-like arrangement.

(3) "Parapsoriasis en plaques, which appears as sharply circumscribed, yellow or wine-red areas, with little or no scaling, and as a rule, without itching."

The cause is unknown, and the same may be said concerning treatment. The disease lasts for years.

Paronychia.—Gr. *παρά* near + *ὄνυξ* nail. See Onychia, under Nail Diseases.

Pediculosis Capitis.—L. *pedi'culus*, louse; *ca'put*, head. Nits are distinguished from dandruff by being firmly attached to the hair shaft.

Treatment.—One of the following methods may be chosen:

(1) Soak the scalp and hair for twelve hours with equal parts of kerosene and a bland oil, such as cottonseed, linseed, or olive oil, or liquid vaseline, or vinegar and cover the head with a cap or towel (avoid the neighborhood of flames). At the end of twelve hours, shampoo the head and hair thoroughly with soap and hot water, dry with a towel, and repeat the treatment.

(2) After a thorough preliminary shampoo with soap and hot water, wet the scalp and hair thoroughly, once or twice daily for two or three days, with bichloride solution, 1 : 500 to 250, preferably a solution in vinegar or acetic acid, 25 per cent., to dissolve away the nits:

℞ Acidi acetici..... ℥ii
Hydrargyri perchloridi..... gr. iii–viiss
Aquæ, q.s., ad..... ℥viii

The hair and scalp should, at the same time, be shampooed daily.

Instead of bichloride solution, one may use tincture of cocculus indicus, diluted with one, two, or three parts of water; or carbolic lotion, 1 : 40.

If acetic acid is not used, the nits must be removed with a fine-comb.

Pediculosis Corporis.—L. *pedículus*, louse; *cor'pus*, body. Hemorrhagic specks and parallel linear scratch marks about the upper part of the back and shoulders, around the waist, over the sacrum and down the outside of the thighs are diagnostically significant.

Treatment.—The body clothing and bed clothing should be thoroughly baked, boiled, or gone over with a very hot iron. The pediculus vestimentorum lives in the seams of the clothing, and only goes to the body to forage. The body should be thoroughly scrubbed with soap and hot water and a brush. As a preventive measure, the clothing may be lightly dusted, once a week, with washed sulphur, or a mixture of talc, 20 gms., creosote, 1 c.c., and sulphur, 0.5 gm.

To fumigate quarters, first wash the walls with kerosene or 5 per cent. carbolic acid, then seal the room, and burn 5 pounds of sulphur for every 1,000 cubic feet of space. Keep the room closed for six hours. Repeat in ten to fourteen days.

Pediculosis Pubis; Crab-Lice.—L. *pedículus*, louse; *pub'is*, pubes. The pediculus pubis invades the pubic region, the axillæ, the eyebrows and eyelashes, rarely other parts.

Treatment.—After a thorough shampoo with soap and hot water, bathe the parts twice daily with kerosene and vinegar, equal parts, or a solution of bichloride, 1 : 500 to 250, in vinegar or 25 per cent. acetic acid, the latter to remove the nits:

℞ Hydrargyri perchloridi..... gr. iii–viiss
Acidi acetici..... ℥ii
Aquæ, q.s., ad..... ℥viii

In place of the lotion, one may employ unguentum hydrargyri ammoniati, 5 to 10 per cent., or equal parts of Peruvian balsam and vaseline.

In involvement of the eyelashes, pick off the parasites and ova with small forceps, sponge the eyelashes with carbolic lotion, 1 : 40, to kill the nits, and carefully apply to the edge of the lids unguentum hydrargyri nitratis diluti. The dead nits may be removed with dilute acetic acid.

Peliosis Rheumatica.—Gr. πελιός livid; ῥεῦμα flux. See Purpura.

Pellagra.—See Part 1, General Medicine and Surgery.

Pemphigus.—Gr. πέμφιξ blister. A very rare, acute or chronic disease, characterized by the spontaneous formation of bullæ in successive crops.

The following varieties are described:

(1) **Pemphigus Acutus** including (a) a form occurring in children and young chlorotic girls, which may or may not be epidemic, and which may terminate in recovery; (b) a very rare and usually fatal form, due to the bites of animals, or to animal products; (c) a less severe, but serious and sometimes fatal form following rheumatic fever, diphtheria, the exanthemata, vaccination, etc.

(2) **Pemphigus Chronicus seu Vulgaris** the usual form. Strong emotion, chill, vaccine, and drugs are cited as possible causal factors. It may or may not end in recovery. It is usually persistent and frequently relapsing. The pruriginous form is the most chronic.

(3) **Pemphigus Foliaceous** very rare, distribution of rash general, almost invariably fatal. It may commence as such, or it may follow the acute or chronic form. It sometimes follows dermatitis herpetiformis or general exfoliative dermatitis. Chill, violent emotion, or local infection may be causal.

(4) **Pemphigus Vegetans** an exceedingly rare form, in which fungoid or papillomatous vegetations follow upon the bullæ. It is almost invariably fatal.

Other diseases than pemphigus, in which bullæ may occur, are dermatitis herpetiformis (possibly a variety of pemphigus), erythema multiforme, urticaria, impetigo contagiosa (pemphigus neonatorum, a bullous infantile variant of impetigo), eczema, dermatitis venenata, herpes, pompholyx, epidermolysis bullosa (congenital pemphigus), varicella, burns, congenital syphilis, leprosy, organic nervous diseases, hysteria.

Prognosis.—"Almost all (acute) cases unattended by temperature elevation or other constitutional symptoms get well"; others are very serious. "The prospect in children is much better than in adults." The chronic cases are usually persistent and relapses are not uncommon. Pemphigus foliaceous is usually fatal, sometimes after many years. Pemphigus vegetans is usually fatal in from three to twelve months. (Stelwagon.)

Treatment.—Correct hygiene, a generous diet, with perhaps codliver oil (see Part 11 for drug formulæ, etc.), change of scene and climate, and tonics are indicated. Arsenic is recommended in increasing doses up to the point of tolerance, and continued in small doses for some time after the disease has disappeared. Dench says it is the best prophylactic. Strychnine and quinine in full doses (gr. v of quinine, t.i.d.) may be advantageously given with the arsenic. Salicin, gr. xv, up to gr. xxx, well diluted, t.i.d., as a substitute for arsenic (Crocker), iron in full doses, linseed meal, pilocarpine, atropine, and small doses of opium (the latter especially in the vegetative form—Hutchinson) have apparently proved of advantage in some cases. Potassium iodide should not be given.

The blebs should be punctured as soon as they appear and the collapsed sacs painted with flexible collodion. The best results, says Dench, are obtained by this treatment. Calamine liniment and bland ointments, such as those of zinc oxide and boric acid, are useful soothing applications. For itching, add carbolic acid, gr. ii–xxx to the ounce of ointment, ℥ss–ii to the pint of lotion (Stelwagon).

℞ Calaminæ,
Zinci oxidi, aa ..... ℥iv
Liquoris calcis,
Olei olivæ, aa ..... ℥iv
Acidi carbolici ..... ♏xx–xl
Adipis lanæ hydrosi ..... ℥i
(Calamine liniment.)

℞ Pulveris acidi borici ..... ℥ss
Talci,
Zinci oxidi, aa ..... ℥ss

Sulphur or alkaline and bran baths are useful: (1) Potassium sulphide, ℥ii–iv, to thirty gallons of tepid water; (2) Lime, ℥ss, sublimed sulphur, ℥i, distilled water, ℥x, boiled down to six ounces and filtered, ℥ii–iv to thirty gallons of water; (3) Sodium bicarbonate, ℥ii–x, bran, one gallon, to thirty gallons of water. Follow the bath by the application of an ointment. In pemphigus vegetans, with offensive discharge, apply lint soaked in carbolized oil, 1 : 40, dust the papillary growths freely with iodol, rinse the mouth frequently with liquor sodæ chlorinatæ (*q.v.* in Part 11), and use a spray of dilute potassium permanganate solution several times daily. (Crocker.)

Denudation and resulting cicatrization of the mucous membrane of the conjunctiva, nose, mouth, and throat may occur in pemphigus. For xerophthalmus (Gr. ξηρός dry + ὀφθαλμός eye) instil into the conjunctival sac, milk, glycerine, or mucilaginous substances, such as mucilago semenum cydoniorum. (Fuchs.)

In extensive cases a water-mattress should be used. See also Dermatitis Herpetiformis.

Penjdeh Sore.—See Oriental Sore.

Perforating Ulcer of the Foot.—A trophic, painless affection, due to diabetes, chronic alcoholism, arteriosclerosis, thromboangitis (see Gangrene), and degenerative nervous diseases, *e.g.*, tabes, general paresis, syringomyelia, Friedreich's ataxia, hemiplegia, myelitis, progressive muscular atrophy, spina bifida, cord injury, as in fracture of the spine, cord tumor, multiple neuritis, division of the peripheral nerves.

Treatment.—See Ulcer, Cutaneous.

Perlèche.—Fr. *perlècher*, to lick. A contagious affection (impetigo, says Sabouraud) of the commissures of the lips, occurring almost exclusively in infants and young children, characterized by a blanched and sodden appearance of the epithelium, resembling mucous patches, and a tendency to cracking and crusting at the mouth angles.

The disease runs a course of several weeks to several months, and tends to recur.

Treatment.—Keep the lips cleansed with, say, a warm solution of boric acid, gr. xv ad ℥i, and apply an ointment of zinc oxide or boric acid, 10 per cent. The occasional application of silver nitrate, 5 per cent., or zinc sulphate, 1 per cent., may be of service. In view of the contagiousness of the disease, attend to the nursing bottles, etc.

Pernio.—See Chilblain.

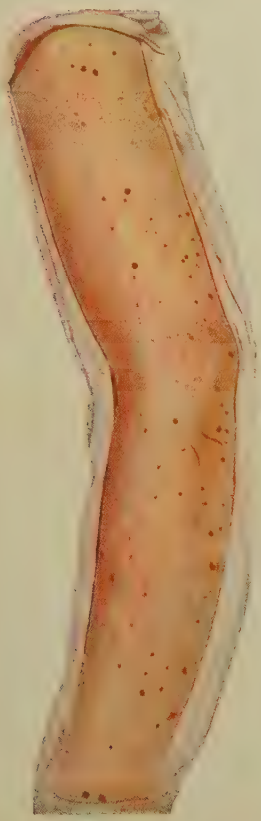
Perspiration.—See Sweat.

Peruvian Wart; Verruga Peruana.—Sp. Verruga Peruana, Peruvian wart. A chronic, infectious, inoculable disease, endemic only in certain valleys of the Pacific slope of the Peruvian Andes, probably caused by Yzquierdo's bacillus, and characterized by an incubation period of eight to forty days, a prodromal febrile period of one to eight months, or longer, with irregular fever, anæmia, articular and muscular pains, and painful enlarged liver and spleen, followed by an eruption of pinhead to pea-sized to

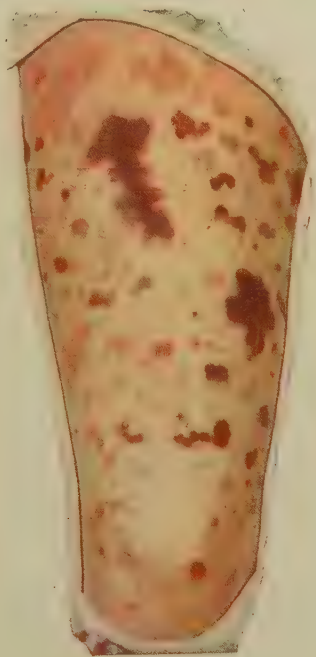
1. — *Pityriasis rosea of Gilbert.*
N° 2101. Dr Hallopeau.

2. — *Arthropathic psoriasis.*
N° 2336. Dr du Castel

3. — *Psoriasis.*
N° 2320. Dr Hallopeau.



4. — *Hebra's prurigo.*
N° 863. Dr Besnier.



5. — *Purpura.*
N° 1068. Dr Lailler.

6. — *Acute purpura.*
N° 853. Dr Guibout.

St. Louis Hospital Museum, Paris.

SKIN DISEASES : **Pityriasis. Prurigo. Psoriasis. Purpura.**

orange-sized, reddish, granulomatous, wart-like nodules, which also occur in the mucous membranes and internal organs.

About 10 per cent. of the patients die before the appearance of the eruption. After the appearance of the eruption, the disease lasts from four to six months to two years, and ends usually in recovery.

Treatment.—The patient should be removed from the infected region to the coast. The eruptive tendency should be encouraged, as it were, by warm baths and hot drinks. Stimulants may be required. The treatment, indeed, is symptomatic. Tonics, especially iron, arsenic, and quinine, are indicated (see Part 11).

Petechia.—L. A small hemorrhagic spot in the skin. See Purpura.

Phagedena Tropica; Aden Ulcer; Malabar Ulcer.—Gr. *φαγεῖν* to eat; *τροπικός* turning. A chronic, spreading gangrenous or sloughing ulcer of the skin and underlying tissues starting from a slight injury, and occurring in cachectic individuals in hot countries.

Treatment.—Isolate the patient (see Disinfection in Part 1), and prescribe rest, a generous, well-balanced, diet and quinine and other tonics (see Part 11).

Scrape the ulcer thoroughly, removing all diseased tissue, and cauterize with the actual cautery, or else swab with pure carbolic acid, followed by alcohol, and a dusting powder of iodoform, aristol, or boric acid. Continuous irrigation with hot boric acid solution. ℥iv ad Oi, or Dakin's fluid (*q.v.* in Part 11), may be of service.

Phlegmasia Alba Dolens.—Gr. *φλεγμασία* heat inflammation; L. *alb'us*, white; *dol'ens*, painful. See Thrombosis, in Part 1.

Piebald Skin.—See Leucoderma.

Piedra.—Sp. stone. See under Hair Diseases.

Pigmentation of the Skin.—L. *pigméntum*, paint. See Chloasma.

Pinta Disease.—Sp., *pinta*, or *pinto* painted. A very chronic, contagious disease of tropical America, due to several hyphomycetic fungi, and characterized by the occurrence, mostly on exposed parts, of variously sized and shaped scaly discolorations.

Treatment.—This is the same as that of ring-worm or of tinea versicolor. Tincture of iodine, pure or diluted, may be applied to recent patches, and chrysarobin to chronic, obstinate patches.

Pityriasis Capitis.—Gr. *πίτυρον* bran: referring to branny scales; L. *cap'ut*, head. See Dermatitis Seborrhœica.

Lichenoides Chronica.—Lichen + Gr. *εἶδος* form. See Parapsoriasis.

Pityriasis Rosea.—Gr. *πίτυρον* bran; L. *rośa*, rose. A rare, "mildly inflammatory affection, characterized by discrete and frequently confluent, plain or circinate, salmon-tinted, pinkish or pale red, variously sized, scaly efflorescences, seen most abundantly upon the trunk." (Stelwagon.)

Prognosis.—Recovery occurs in from several weeks to several months.

Treatment.—Salicin (*q.v.* in Part 11), gr. xv, t.i.d. and an occasional laxative, are recommended.

A daily half-hour bath containing two or three teaspoonfuls of a strong solution of potassium permanganate, followed by the application of a 3 to 5 per cent. salicylic acid ointment, is advised (Jamieson). A dusting powder of equal parts of boric acid, zinc oxide, and starch or talcum may be useful. For itching, the following lotion may be used:

℞	Calaminæ,	
	Zinci oxidi, aa	℥iv
	Acidi borici	℥ii
	Acidi carbolici	℥ss–i
	Glycerini	℥ss
	Liquoris calcis	℥ii
	Aquæ, q.s., ad	℥viii

Pityriasis Rubra.—Gr. *πίτυρον* bran; L. *rub'er*, red. See Dermatitis Exfoliativa.

Rubra Pilaris.—Gr. *πίτυρον* bran; L. *rúber*, red; *pil'us*, hair. A rare, very chronic, generalized skin eruption of years, duration, characterized by the formation around the hair follicles, of firm, yellowish to deep-red, subacute inflammatory, acuminate, spiny papules, presenting a nutmeg-grater-like appearance and feel, and in places coalescing to form diffuse, thickened, scaly plaques. It is rebellious to treatment.

Treatment.—Enjoin the observance of a correct hygienic regimen, *e.g.*, adequate rest and exercise, fresh air day and night, regular hours of eating and sleeping, rest before and after meals, a well-balanced, nutritious diet, and plenty of water, tonics, including cod-liver oil, and regulation of the bowels. Arsenic in large doses, protiodide of mercury, and thyroid extract may be tried (see Drugs, Part 11). Warm weather and sweating have a favorable effect, therefore daily exercise and frequent hot baths are recommended, with perhaps pilocarpine (*q.v.* in Part 11). Following the bath, and once or twice daily, the skin should be anointed with the keratolytic unguentum acidi salicylici, gr. x–lx ad ℥i. Thickened patches may be treated with a 10 to 20 per cent. salicylic acid plaster, or a 2 to 10 per cent. solution in collodion. Röntgenother-

apy (*q.v.*) is recommended, "carried to the point of producing the first evidences of reaction." (Pusey.)

Plaques of the Tongue, Transitory, Benign.—Fr., a flat patch. See Geographic Tongue.

Poison-Ivy; Poison-Oak.—See Dermatitis Venenata.

Pomphyx.—Gr. πομφόλυξ bubble. A rare, acute inflammatory, deep-seated, vesicular and bullous eruption, limited to the hands and feet, disappearing spontaneously in ten days to two weeks, but showing a tendency to recur, especially in summer.

Treatment.—General ill health and nervous debility are factors in its etiology, therefore a careful examination should be made, and any discoverable derangements corrected, if possible, and a correct hygienic regimen instituted, *e.g.*, adequate rest and exercise, regular hours of eating and sleeping, rest before and after meals, fresh air day and night, a well-balanced, nutritious diet, regulation of the bowels, care of the skin, and tonics, such as codliver oil, arsenic, iron, quinine, and strychnine (see Part 11).

The following daily astringent applications are recommended:

℞ Calaminæ,
Zinci oxidi, aa ..... ʒii–iv
Acidi borici ..... ʒii
Acidi carbolici (for itching) ..... ♏xv–ʒi
Liquoris calcis ..... ʒii
Aquæ, q.s., ad ..... ʒviii
M. Sig.—Shake well, and apply frequently.

Do not bandage a finger or toe on which carbolic acid is used, for fear of gangrene.

℞ Mentholis ..... gr. ii
Acidi salicylici ..... gr. x
Emplastri plumbi,
Emplastri saponis, aa ..... ʒiss
Petrolati ..... ʒv
(Stelwagon.)

℞ Zinci oleatis ..... ʒi

℞ Cerati plumbi subacetatis ..... ʒi

The ointments should be applied thickly on strips of linen or lint, each finger being done up separately.

Porokeratosis.—Gr. πῶρος callus + κέρας horn. A very rare, hereditary disease, occurring upon the exposed parts, but sometimes affecting the feet and mucous membranes, characterized by the presence of one or more, slowly spreading, coin-sized or larger, annular or gyrate patches, presenting a slightly atrophic centre and an abruptly projecting, blackish, horny border, representing spreading hypertrophy of the stratum corneum followed by its central atrophy.

Treatment.—Thorough excision and electrolysis (see under Nævus Vascularis) are the only effectual curative measures to date.

Port-Wine Mark.—See Nævus Vascularis.

Post-Mortem Wart.—See Tuberculosis Cutis.

Powder Stains, Removal of.—If the marks can not be picked out, remove them by means of a cutaneous trephine of extremely small calibre. Place the punch over the powder speck and give a slight rotary motion, "pressing firmly, but not going down to unnecessary depth; the little disc of skin tends to jut out, can be snipped off, and the minute cavity filled with powdered subsulphate of iron or with a paste of tincture of benzoin and boric acid, or one part acetanilid and seven parts boric acid." (Stelwagon.)

Another method is the application of a concentrated solution of hydrogen dioxide, continued until a white zone appears around and under the grains, and until bubbling has fairly ceased, after which the grains may be readily removed with a pointed instrument; or one part glycerine and three parts hydrogen dioxide may be applied freely on lint, if not irritating. (Stelwagon.)

"A certain amount of anæsthesia may be obtained by the application of small quantities of weak cocaine solution or by the use of an ointment of 10 to 20 per cent. orthoform in lanolin." (Pusey.)

Prickly Heat.—See Miliaria.

Prurigo.—L. *prurire*, to itch. A chronic disease, common in Europe but rare in America, associated with poor food and bad hygiene, beginning in infancy, and marked by the development of constantly recurring, intensely itching, discrete, small, hard, pale red, deeply seated, only slightly raised papules, most abundant on the extensor surfaces, especially of the legs, and usually associated with enlarged lymphatic glands, usually the inguinal. The skin, even where not affected, is harsh and dry.

Prognosis.—Mild cases admit of cure, but relapses are common. Severe cases are incurable, although relief can be afforded by treatment.

Treatment.—Put the patient to bed, if practicable, in a well-ventilated room, and prescribe a liberal, well-balanced diet, with perhaps codliver oil, and iron (see Part 11), if indicated. For the intense itching, Crocker recommends tincture of cannabis indica, ♏v, gradually increased even to ♏xxx, t.i.d.p.c., for a child of eight or ten years. About every six weeks, it should be intermitted for two weeks. Antipyrine,

beginning with two-grain doses, also gives relief. Thyroid extract (*q.v.*) may be tried.

After healing by mild applications any eczema or ecthyma that may be present, prescribe inunctions of unguentum olei cadini, ʒi ad ʒi, alternating with unguentum acidi salicylici, ʒi ad ʒi, twice daily, and a prolonged warm bath every second or third night. Daily hot prolonged alkaline or sulphur baths (sodium bicarbonate or potassium sulphide, two to four ounces to the bath), lasting one-half hour, and followed by the aforementioned inunction, are of service. The tar ointment should be used only for short periods at a time. Kaposi recommends beta-naphthol ointment, 1 to 2 per cent. for children, 5 per cent. for adults, but its use is attended with the risk of poisoning.

X-ray treatment, as employed for eczema may be of benefit. A dose of one-third or one-half pastille, administered through a filter of 1 mm. or more, once a week, may be continued for long periods of time without producing an observable reaction on the skin. (Knox.)

Pruritus.—L. *prurir'e*, to itch. **A. Generalized Pruritus Without Visible Changes in the Skin.**—Causes.—Congenital hyperæsthesia; nervous disorders, functional and organic, nervous strain, worry, and other emotional disturbances; the climactery; thyroidismus; toxic influences, due to gastro-intestinal disturbances, constipation, the gouty or rheumatic diathesis, nephritis, diabetes, jaundice, toxæmia of pregnancy, Hodgkin's disease, certain foods and drugs, *e.g.*, opium, iodine, iodoform, alcohol, tea, coffee, tobacco, and ingesta which cause urticaria, etc.; senile degeneration of the skin; varicose veins; winter season; summer season; bathing.

Treatment.—Attend to the cause. Prescribe a bland diet, excluding spices, condiments, pickles, acids, tomatoes, strawberries, gooseberries, cabbage, cauliflower, sauces, sweets, pastry, hot liquids, fried foods, meat, cheese, tea, coffee, alcohol, chocolate and any other food that may prove causal, and also tobacco. Water should be drunk in abundance. The bowels should be kept active. An occasional saline (see Part 11) one hour before breakfast, and Vichy, or sodium bicarbonate, one-quarter of a teaspoonful in a tumbler of water one hour before meals, may be useful. The underwear should be of cotton, lisle thread, linen or silk, instead of wool. Too much soaping and bathing is apt to aggravate the itching. Alkaline baths (sodium bicarbonate, two to four ounces to the bath) lasting ten to thirty minutes, followed by a bland oil, such as cottonseed, olive, or almond oil, liquid vaseline, or cold cream, and following this a bland dusting powder, such as rice-flour, or cornstarch, or talcum, repeated every two or three days, may be of service. In bath pruritus, the bath should be tepid, as brief as possible, the skin dried by tapping, not by rubbing, and a bland oil or powder applied. The bath should not be taken just before retiring.

Antipruritic internal remedies include cannabis indica, pilocarpine, gelsemium, antimony for senile pruritus, carbolic acid in liberal doses, antipyrine, phenacetin, acetanelid, lactophenin, bromide, valerian, chloral, sulphonal, belladonna, strychnine, lupulin, calcium chloride, arsenic, quinine in large doses (see Part 11 for drug formulæ, etc.)

Antipruritic applications:

℞ Calaminæ,
Zinci oxidi, aa ..... ʒiv
Acidi carbolici seu mentholis .. gr. xx–xl
Olei olivæ,
Liquoris calcis, aa ..... ʒiv
(Calamine liniment.)

℞ Calaminæ ..... ʒiss
Zinci oxidi ..... ʒiii
Acidi borici ..... ʒii
Glycerini ..... ♏v–xv
Acidi carbolici ..... ♏xv–ʒi
Liquoris calcis ..... ʒii
Aquæ, q.s., ad ..... ʒviii
(Calamine lotion)

℞ Tragacanthæ ..... ʒiss–iii
Glycerini ..... ʒv
Acidi borici ..... ʒv
Acidi carbolici ..... gr. lxxx–clx
Olei rosæ ..... ♏i
Olei lavandulæ ..... ♏iii
Olei bergamot ..... ♏v
Aquæ, q.s., ad ..... Oi
(Pusey, not greasy.)

℞ Acidi carbolici ..... ʒi–iii
Glycerini ..... ʒii
Alcoholis ..... ʒi
Aquæ, q.s., ad ..... Oi
(Stelwagon.)

℞ Acidi carbolici ..... ʒii
Thymolis ..... gr. xvi
Resorcini ..... ʒss–i
Sodii boratis ..... ʒss
Glycerini ..... ʒii
Alcoholis ..... ʒi
Aquæ, q.s., ad ..... Oi
(Stelwagon.)

℞ Mentholis ..... gr. xvi–lxxx
Spiritus rosmarini ..... ʒii
Aquæ, q.s., ad ..... ʒviii

Other local remedies are olive, cottonseed, or almond oil, vaseline, liquid vaseline, cold cream or zinc oxide ointment, containing carbolic acid, gr. v–xx to the ounce, or menthol or thymol, gr. v–xxiv to the ounce, or salicylic acid or resorcin, gr. v–x to the ounce; liquor carbonis deter-

gens, ℥ii, ad aquam, ℥viii; camphor chloral, aa, pure or diluted; acetic acid, one part, to twenty, thirty, or more parts of water; dusting powders, either alone or following the lotions.

General galvanization may be beneficial.

B. Pruritus Ani.—CAUSES.—Hepatic derangement; constipation; gouty diathesis; diabetes; nephritis; jaundice; certain foods and drugs (morphine, iodine, iodoform, alcohol, tea, coffee, tobacco, etc.); heat; cold; neurosis; hemorrhoids; intestinal catarrh; catarrhal proctitis or sigmoiditis; anal fissure; anal fistula; rectal tumors; rectal stricture; rectal foreign body; intestinal worms; uncleanliness; too frequent cleansing; blind sinuses frequently originating in ulcers at the bottom of the crypts of Morgagni; minute fissures at the bottom of the anal folds.

TREATMENT.—First cleanse the anal orifice and canal thoroughly with castile soap and hot water, and rinse. This often suffices in itself to stop the itching. If not, one may then bathe the parts with carbolic acid solution, ℥ss ad ℥iv, or saturated boric acid solution, gr. lxxv ad ℥iv, or bichloride, 1 : 4000, followed perhaps by one of the following ointments, and this in turn by a dusting powder:

℞ Hydrargyri ammoniati..... gr. xx
Acidi carbolici..... gr. x
Adipis benzoinati..... ℥i

Instead of the carbolic acid one may use creosote, ♏xv, or camphor, ℥ss, cum spt. rectificati, *q.s.*

℞ Acidi carbolici seu mentholis.... gr. v–xxx
Petrolati mollis seu petrolati liquidi..... ℥i

Other local remedies are ung. hydrargyri nitratis, pure or diluted; ichthyol, 5 per cent. lotion, or 10 per cent. ointment; compound tincture of benzoin; chloral, gr. xv, in glycerine, ℥ss; chloroform, ℥ss–i, ad ceratum vel petrolatum, ℥i; cocaine, gr. i–x, to the ounce of ointment or lotion; chloral and camphor, aa℥ss–i, rubbed together until an oil is formed, and added to ceratum or petrolatum, ℥i; Peruvian balsam rubbed up with a little vaseline; ung. picis liquidæ (*q.v.* in Part 11). Tar preparations should be continued for only four or five days at a time, followed by zinc oxide ointment for one or two days, before resuming the tar.

If simple measures are not effectual, search for and correct the underlying cause, especially the opening up of blind sinuses, using a general anæsthetic, if necessary. For external piles, inject hazeline or apply ung. gallæ et opii.

A small blister (see Part 11) over the lower lumbar region is sometimes effectual. Light X-ray (*q.v*) exposures with a hard tube, every one to three days, are highly recommended. Says Tidy: "A half Sabouraud dose may be given at the first exposure, and if not successful a full dose three or four days later."

If all other measures fail, it is advised that all the sensory nerves to the part be resected (consult Earle, *Diseases of the Anus, Rectum, and Sigmoid*).

C. Pruritus Vulvæ.—See Part 2, Gynæcology.

D. Pruritus Scroti.—See Part 3, Genito-Urinary Diseases.

E. Pruritus Meati Urinarii.—CAUSES.—Urethritis; urethral stricture; stone; cystitis.

Pseudochromidrosis.—Gr. ψευδής false. See under Chromidrosis.

Psoriasis.—Gr. ψώρα itch. A common, acute or chronic, recurrent, inflammatory disease of the skin, characterized by the occurrence of variously sized, rounded, sharply defined, dry, reddish patches, covered with silvery-white, imbricated, adherent scales, which when scraped off, reveal minute bleeding points. It occurs especially upon the extensor surface of the knees and elbows, at the hair border of the scalp, and on the trunk.

Etiology.—This is unknown. Possible causal influences are heredity, the gouty diathesis, nitrogen retention, arthritis deformans and other arthropathies, tonsillitis, digestive and metabolic disturbances, defective kidney elimination, the intemperate use of tea, coffee, alcohol, or tobacco, debility, neurasthenia, mental depression.

The question of its contagiousness is not definitely decided.

Prognosis.—This is good for any one attack, but recurrences are almost certain. In moderate cases the eruption may be made to disappear in from three to twelve weeks, but it recurs. Exceptionally the disease develops into a general exfoliative dermatitis.

Treatment.—A low protein (low nitrogen) diet has a very favorable influence upon the eruption. The salicylates (see Part 11) may be of benefit in acute cases. Arsenic (*q.v.*) is of especial value in chronic cases, but is contraindicated in acute cases. It should be continued for about a month or two after the disappearance of the eruption. In such a disease of unknown etiology, one should make a careful search for abnormalities, and direct the treatment against any such that may be found.

In the local treatment, first remove the

accumulation of scales by means of thrice weekly or daily, warm, alkaline baths (sodium bicarbonate, sodium biborate, or ammonium chloride, two to six ounces to the thirty-gallon bath, duration, twenty to thirty minutes), or the home cabinet steam bath, and scrubbing with soft soap and hot water, followed by the inunction, twice daily, of unguentum acidi salicylici, gr. xx–xl ad ℥i. Rubber cloth underwear may also be worn for several hours daily.

After the scales have been removed, employ the salicylic ointment as a general application, and treat individual patches with one of the following stimulating preparations, named in the order of their effectiveness:

℞ Chrysarobini..... ℥i–ii
Chloroformi..... ℥i

M. Sig.—Shake and paint on two or three coatings; then paint on a few coatings of flexible collodion. Renew when the film becomes loose.

℞ Chrysarobini..... ℥i
Acidi salicylici..... gr. x
Collodii flexilis, q.s., ad..... ℥i

℞ Chrysarobini..... gr. x–lx
Adipis benzoinati,
Petrolati mollis, aa..... ℥ss

M. Sig.—Rub in vigorously once or twice daily, wipe off the excess, and dust over with rice flour, cornstarch, or talcum.

Chrysarobin stains the skin and clothing, the latter indelibly, sometimes causes an itching erythema and toxic symptoms (see Part 11), and should not be used on the face or scalp for fear of being conveyed to the eyes and setting up a conjunctivitis.

℞ Picis liquidæ, olei cadini, olei rusci, seu tinct. comp. picis anthracis..... ℥ss–ii
Acidi salicylici..... gr. x
Unguenti zinci oxidi..... ℥i

M. Sig.—Rub in freely twice daily, wipe off the excess, and apply a dusting powder.

℞ Liq. picis carbonis, painted on pure, or combined with vaseline, ℥ii ad ℥i.

℞ Hydrargyri ammoniati..... ℥ss–i
Acidi salicylici..... gr. x–xx
Petrolati mollis..... ℥i

M. Sig.—Apply daily to the scalp, and shampoo the latter thoroughly every few days with green soap and hot water.

℞ Beta-naphtholis..... gr. xx–lx
Petrolati mollis..... ℥i

℞ Sulphuris præcipitati..... ℥ss–i
Acidi salicylici..... gr. x–xx
Petrolati mollis..... ℥i

In the rare acutely inflammatory cases, use only mild applications, *e.g.*, acidi salicylici, gr. iii–iv to the ounce of petrolatum, or calamine liniment:

℞ Calaminæ,
Zinci oxidi, aa..... ℥iv
Acidi carbolici..... ♏iv–xl
Liquoris calcis,
Olei olivæ, aa..... ℥iv
(Stelwagon.)

The best method of treatment of chronic psoriasis is with the X-rays, using the same technique as that for eczema. Says S. E. Dore: "A Sabouraud pastille dose, or half this amount repeated two or three times, is usually sufficient for a single area." Knox administers one-third or half a pastille dose once a week for three or four weeks to large areas, later once in three weeks.

Psoriasis of the Tongue.—See Leucoplakia Buccalis.

Pulex Penetrans, or Sand-Flea.—L. *púlex*, flea. See Bites.

Purpura.—L.; Gr. πορφύρεος purple. Purpura designates hemorrhage into the skin. The smaller or pinhead-sized hemorrhages are called petechiæ, the larger patches, ecchymoses. They do not disappear on pressure as do erythematous lesions. They often occur in successive crops, and in purpura hæmorrhagica are accompanied by bleeding from the mucous membranes. Purpura is not congenital or hereditary, as is hæmophilia. The frequent association of purpura, urticaria, erythema multiforme, erythema nodosum, and angioneurotic œdema, suggests an intimate relationship between these affections.

Etiology.—Skin hemorrhages sometimes occur in the following conditions, viz., acute infectious diseases (typhus fever, typhoid fever, bubonic plague, scarlet fever, measles, influenza, smallpox, cerebrospinal meningitis, septicopyæmia, ulcerative endocarditis, relapsing fever, vaccinia, intestinal anthrax, malaria, syphilis); cachectic states (nephritis, heart disease, severe anæmia, cancer, tuberculosis, leukæmia, Hodgkin's disease, scurvy, icterus gravis, enterocolitis in children, chronic alcoholism, senility, etc.); poisoning (iodides, mercury, copaiba, quinine, antipyrine, belladonna, ergot, benzol, snake venom, cholæmia, blood sera, possibly salicylates, etc.); neuroses (severe neuralgia, locomotor ataxia, particularly following lightning pains, acute myelitis, transverse myelitis, multiple sclerosis, hemiplegia, the purpura occurring on the paralyzed side, hysteria, severe emotional disturbances); mechanical influences (epileptic fit, whooping-cough paroxysm, tight bandaging); hæmophilia; thermic fever.

Besides these many conditions in which skin hemorrhages sometimes occur, there are five clinical entities in which purpura is a prominent symptom, viz.

1. Purpura Simplex.—A mild form, with perhaps slight articular symptoms, seen most commonly in children, lasting from one to six weeks, rarely a year or longer in chronic cases.

2. Purpura (Peliosis) Rheumatica or Schönlein's Disease.—An acute form associated with polyarthritis, fever, often sore throat, and often urticaria, erythema multiforme, and erythema nodosum, of good prognosis.

3. Henoch's Purpura.—Characterized by recurrent attacks, lasting several days, or purpura associated with abdominal colic, sometimes vomiting, diarrhœa, melæna, and arthritic symptoms, usually splenic enlargement, often urticaria, erythema multiforme, and angioneurotic œdema, frequently nephritis.

4. Purpura Hæmorrhagica.—Purpura associated with hemorrhages from the mucous membranes, lasting from one to eight weeks, sometimes complicated with nephritis. Exclude scurvy, leukæmia, and anæmia.

5. Purpura Fulminans.—A rapidly fatal form with extensive ecchymoses but no mucous membrane hemorrhages.

Treatment.—Rest in bed, mental repose, fresh air, smooth sheets, and gentleness in handling the patient, so as to avoid producing ecchymoses, are important considerations. The diet should be light at first, and later gradually increased. Foods rich in iron are advised, such as spinach, egg-yolk, asparagus, beef, apples, carrots, beans, potatoes, rice, named in the order of their iron content, also acids and fruit juices. The food should not be hot, and no stimulants, such as alcohol, coffee, or tea should be allowed. For constipation, prescribe oranges for breakfast, and baked apple or apple sauce, preserved fruits, honey, and if necessary cascara sagrada, castor-oil, (see Part 11), or enemas; no salines. Fowler's solution (*q.v.*) is recommended in gradually increasing doses until physiological effects are obtained. Peliosis rheumatica, says Kerley, "usually yields readily to treatment for rheumatism," viz., salicylates, alkalies, and restriction of red meats and cane sugar. MacGowen strongly advocates the hypodermatic or internal administration of adrenalin solution, 1 : 1000, ten drops every two hours for forty-eight hours and then smaller doses, in purpura, urticaria and erythema multiforme (see Part 11, Drugs).

For arthritic symptoms, raise the parts, and envelop the affected joints in cotton. Warm applications of lead and opium wash (*q.v.*) or wet compresses covered with oiled silk afford relief.

To check bleeding, secure rest and analgesia by means of morphine, if necessary, and prescribe oleum terebinthinæ, or dilute or aromatic sulphuric acid, or fluid extract of ergot, or fluid extract of hydrastis, or calcium lactate, or atropine hypodermically, or Merck's sterilized gelatine solution, 10 per cent., or the swallowing of bits of ice, or for hæmatemesis, adrenalin, 1 : 1000, ℥i every hour for several hours. Calcium lactate is reputed to be the best remedy.

For epistaxis, employ adrenalin, 1 : 1000 (see also Epistaxis in Part 8, Nose Diseases).

Blood transfusion (see Part 1) may be practiced in serious cases, or in lieu of this, hypodermic injections of antidiphtheritic or antistreptococcic serum, avoiding the risk of inducing anaphylactic phenomena (see Anaphylactic Shock in Part 1.)

During convalescence prescribe iron.

The dangers in purpura are acute nephritis and cerebral hemorrhage.

Purpura Annularis Telangiectodes.—L *pur'pura* purple; *anŭlus*, ring; Gr. τέλος end + ἀγγεῖον vessel + ἔκτασις dilatation. An extremely rare, bilateral and usually symmetrical eruption, of slow evolution, requiring several weeks or months to attain its maximum development, and of equally slow involution, the total eruptive period ranging from several months to a year or more, frequently preceded by rheumatic or neuralgic pains, especially in the knees, and characterized by (1) lentil-sized, well-defined, rose-or red-colored macules, composed of a fine network of dilated capillaries revealed by the diascope (telangiectatic stage), which (2) slowly enlarge by peripheral extension to the size of a dime, or even to that of a silver half dollar, while at the same time, minute, dark red, hemorrhagic puncta appear throughout the lesion, but especially at the margin; as the lesion enlarges it clears in the centre, leaving the latter pigmented yellow to brown (hemorrhagic pigmentary stage); finally, after a more or less protracted period of quiescence, (3) involution occurs, and the lesions slowly fade away, leaving usually but not always, atrophy and alopecia in the centre (atrophic stage). All three stages are sometimes present at one time.

The essential histological features consist of an endarteritis and an endophlebitis obliterans, with hyaline degeneration of the

blood-vessels and the formation of tiny aneurysmal sacculations which rupture, with resulting hemorrhage and pigmentation.

The etiology is unknown. (After MacKee.)

Pustula Maligna.—L. See Anthrax.

Raynaud's Disease.—An uncommon angioneurotic affection (arteriospasm) of the fingers, toes, tip of the nose, internal parts, etc., characterized by periodic, paroxysmal attacks of local ischæmia or syncope, in which the part affected appears dead-white and cold, followed after several minutes to an hour or longer, by local asphyxia or cyanosis, which is later replaced by active hyperæmia, redness, throbbing, and pain. Eight or ten of these attacks may occur in one day; or the one attack may be the last; or several attacks may occur at intervals of six months or a year. In severe cases the local asphyxia or cyanosis may persist, with severe pain, for a number of days, and necrosis or gangrene occur. Hæmoglobinuria sometimes occurs, sometimes abdominal colic, rarely transient aphasia, transient hemiplegia, transient amblyopia due to spasm of the retinal vessels, or convulsions.

For other causes of gangrene, which should be excluded, see Gangrene of the Skin.

Etiology.—Syphilis is said to be the underlying cause in the majority of cases. Heredity may be a factor. A neuropathic disposition predisposes. Nervous shock, emotion, and exposure to damp cold may bring on an attack.

Treatment.—For severe local asphyxia, the following measures may be tried: (1) nitroglycerin (see Part 11 for drug formulæ, etc.); (2) calcium lactate; (3) galvanism with the part immersed in tepid salt water, place the positive electrode over the spine and the other in the water; use as strong a current as can be borne, and make and break the current frequently—Barlow); (4) a tourniquet to the arm in the form of the arm-band of a blood-pressure instrument, cutting off the arterial circulation for several minutes several times a day—Cushing; (5) massage for half an hour twice daily; (6) alternate hot and cold douches, or wrapping in cold wet cloths. Phenacetin, antipyrine, or morphine may be required for the pain. Should gangrene occur, keep the parts antiseptic, and employ surgical measures when required. Potassium iodide may cause healing of the gangrene.

Enjoin the observance of a correct hygienic regimen, *e.g.*, adequate rest and exercise, freedom from worry, fresh air day and night, regular hours of eating and sleeping, rest before and after meals, a liberal, well-balanced bland diet, with perhaps codliver oil, and tonics, free bowel activity, a daily morning tepid bath in a warm room, before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel, warm, dry feet and hands in cold weather, and if possible, wintering in Florida, Southern California, or Egypt.

Anastomosis of the afferent artery with the efferent vein (reversal of the circulation) has been done with success.

Recklinghausen's Disease.—See Fibroma.

Recurrent Summer Eruption.—L. *recur'rens*, returning. See Hydroa Vacciniforme.

Red Gum.—See Miliaria.

Red Neuralgia of the Extremities.—See Erythromelalgia.

Rhinopharyngitis Mutilans.—See Gangosa.

Rhinophyma.—Gr. *ῥίς* nose + *φύμα* growth. See Acne Rosacea.

Rhinoscleroma.—Gr. *ῥίς* nose + *σκληρός* hard + *-ωμα* tumor. A very rare, chronic, slowly progressive, local affection, due to the bacillus rhinoscleroma, involving usually the anterior nares and adjacent parts, and characterized by the occurrence of red, smooth, soft, painless but tender, usually non-ulcerative nodules or plaques, which soon become shrunken, pale, or grayish-white, and of ivory-like hardness. It may continue for many years, and always remains local, although it may involve the pharynx, larynx, and even the bronchi. It eventually causes stenosis. It occurs most frequently in Austria, Russia, Central America, and Brazil.

Histologically, the growths are made up of newly formed granulation tissue with old and new fibrous tissue and very many small round and oval cells, and in the deeper parts, the larger round or irregular Mikulicz or foam cells, and hyaline masses (" Russel bodies "). In sections of tissue stained according to Gram (see Part 3, under Gonorrhœa), there can be seen in the Mikulicz cells and in the lymph spaces surrounding them, the small, oval, capsulated diplobacilli described first by Frisch in 1882. These do not retain the stain, and resemble morphologically and culturally the diplobacilli of Friedlander. They are almost always found in pure culture. (Kæmpfer.)

Prognosis.—This has heretofore been unfavorable; but recent experience with the X-rays and radium has given encouraging results.

Treatment.—The Röntgen rays, *q.v.* ("twenty-three gentle applications, each lasting six minutes ") and radium bromide (" seven applications of sixty mg., each lasting twenty minutes ") are well recommended

(Author ?). Alderson has obtained good results, using a Coolidge tube, with five-inch spark gap, the target ten inches from the lesions, an aluminum filter, 1 mm. thick, interposed, and fifty-two milliampère minutes administered, with a repetition of the treatment at the end of six weeks. Tracheal scleroma is exposed to the X-rays through a tracheotomy wound.

The knife and curette and the galvanocautery have been resorted to in order to preserve the patency of the air passages, but the growths have invariably recurred after operation.

Internal and local drugs and vaccine therapy have proved ineffectual.

Ringworm; Tinea Trichophytina.—L. *tĭnea*, moth; Gr. *θρίξ* hair + *φυτόν* plant. A common, local, contagious disease of the skin, produced by several varieties of trichophyton fungi. It is often contracted from animals. Ringworm of the general surface (tinea *circinata*—L. *cir'culus*, ring) is characterized by rounded, sharply circumscribed, slightly elevated, inflamed, red, scaly patches, which tend, by clearing up in the centre, to assume a ring-like aspect. Ringworm of the scalp (tinea tonsurans—L. *tonsu'ra*, shaving) is characterized by rounded, sharply circumscribed, pinkish to grayish, bald, scaly patches, showing broken hair, hair stumps and black dots, and often prominent follicles. It occurs almost exclusively in children. Ringworm of the bearded region (tinea sycosis seu barbæ—Gr. *σῦκον* fig; L. *barba*, beard) may be superficial, resembling tinea circinata, or deep, lumpy, and nodular, with follicular inflammation and hair destruction. Tinea cruris et axillaris is accompanied by acute inflammatory symptoms. On the volar and interdigital surfaces of the hands and feet, ringworm may produce atypical vesciular, scaling or desquamating areas in which it may require several examinations to demonstrate the presence of fungi.

Sometimes a pustular folliculitis, called kerion (Gr. *κηρίον* honey-comb) is produced by the ringworm fungus.

A positive diagnosis of ringworm is made by the microscopic examination of an extracted hair in liquor potassæ, after allowing it to soak for fifteen minutes.

Treatment.—A. Ringworm of the General Surface.—Curable generally in a week or two.

Keep the patches free from scaliness with green soap and hot water, and rub in thoroughly, once to thrice daily, the following parasiticide:

℞ Acidi salicylici ..... gr. xxx
Acidi benzoici ..... ʒi
Petrolati mollis ..... ʒi
(Whitfield.)

℞ Solut. ac. salicyl. concent. in alcohol.

Other eligible but inferior preparations are tincutre of iodine, pure, or perhaps better, diluted with an equal quantity of alcohol; sodium hyposulphite, ʒi ad aquam ʒi; carbolic acid, gr. xv–xxiv ad ʒi; bichloride, 1 : 500 to 250; sulphur. sublim., ʒss, acidi carbolici, ♏xx, adipis lanæ hydrosi, ʒvi, olei olivæ, ʒii; hydrargyri oxidi flavi, vel hydrargyri ammoniati, ʒi, lanolin cum oleo, ʒi; ung. picis liquidæ. Ionization with iodine or mercury ions is recommended (see Ionic Medication in Part 1).

For infants use a weak preparation, *e.g.*, acidi salicylici, gr. x–xv, acidi benzoici, gr. x–xx, lanolin, ʒi; or hydrargyri ammoniati, gr. xxx, ad lanolin, ʒi.

When acute dermatitis is produced, employ a bland application, *e.g.*, acidi carbolici, sue hydrargyri ammoniati, gr. v–x, ad unguentum zinci oxidi, ʒi; or calamine lotion:

℞ Calaminæ,
Zinci oxidi, aa ..... ʒi–ii
Acidi borici ..... ʒi
Glycerini ..... ♏x
Acidi carbolici ..... ♏x–xxx
Liquoris calcis ..... ʒi
Aquæ, q.s., ad ..... ʒiv

After the disease is apparently cured, continue mild applications daily for several weeks to guard against relapse. The underwear should of course, be frequently changed and boiled, and thorough cleanliness practiced, both for prophylactic and curative purposes.

B. Ringworm of the Genitocrural and Axillary Regions.—Curable in several weeks to several months.

First employ soothing applications, if necessary, such as those given above. The same parasiticides may be employed as for tinea circinata, but the older ones, says Adamson, may now be discarded for a cleanly and rapidly efficacious ointment which we owe to Dr. Arthur Whitfield as follows:

℞ Acidi salicylici ..... gr. x–xv
Acidi benzoici ..... gr. x–xv
Olei coca-nucis ..... ʒvi
Petrolati mollis, q.s., ad ..... ʒi

C. Ringworm of the Scalp.—Curable in a few months to a year.

Shave the hair for an inch around the patch, and keep the hair of the entire scalp short. Shampoo the whole scalp every second or third day with green soap and

hot water, rinse thoroughly, and apply a lotion of acidi carbolici, ʒii, resorcinolis, ʒi acidi borici, ʒiv, in water, Oi (Stelwagon). Use the latter daily. A paper, muslin, linen, or oiled silk skull-cap should be worn inside the hat, and the paper cap burned or the others boiled daily. Treat the diseased patch as follows: First gently curette, and then apply the following depilatory, overlapping slightly the edge of the patch: barium sulphide, ʒiii, zinc oxide and powdered starch, aaʒiiss, water sufficient to make a paste. Leave on until a burning sensation is felt, about ten minutes, then wash off thoroughly. Use the depilatory every five to ten days, according to the rapidity of regrowth of the hair. Never apply it to an actively inflamed patch.

After depilation, rub in thoroughly for five or ten minutes, twice daily, one of the following parasiticides:

℞ Acidi salicylici..... ʒss
Acidi benzoici..... ʒi
Petrolati mollis..... ʒi
(Whitfield.)

℞ Sulphuris præcipitati..... ʒii
Adipis lanæ hydrosi..... ʒi

℞ Hydrargyri perchloridi..... gr. x
Alcoholis, q.s.
Olei olivæ,
Keroseni, aa..... ʒiiss
(Highly praised by Holt.)

℞ Hydrargyri ammoniati..... ʒi
Adipis lanæ hydrosi..... ʒi

℞ Hydrargyri biniodidi seu bichloridi gr. i–iii
Tincturæ iodi..... ʒi

M. Sig.—Paint on twice daily two or three coatings each time, until the film cracks or loosens or the area becomes tender; then apply a mild salve and pick off the film as soon as it becomes detachable. Then resume the paintings. (Stelwagon.)

℞ Acidi carbolici,
Tincturæ iodi,
Chlorali hydrati, aa. (Cutler's Fluid.)

The salicylic, sulphur, and mercury ointments are applicable to large areas; the iodine to small, circumscribed areas.

Intermit the treatment if irritation occurs, and apply bland ointments. A kerion should not be incised.

To obstinate patches, no larger than one inch in diameter (never in children), one may apply croton oil, two or three times daily, diluted at first with three parts of olive oil and gradually strengthened up to the pure oil, if necessary. The action of the croton oil may be delimited by means of a border of vaseline. Two or three days are required to bring about the desired amount of inflammatory reaction. As soon as slight swelling and minute pustulation appear, discontinue the oil, and poultice repeatedly until pronounced inflammation is produced. (Stelwagon.)

Says Stelwagon: "After several weeks or a few months discontinue all treatment for the purpose of noting the progress made." "As long as stumps are to be seen, and a tendency to scaliness persists, a cure has not been effected." To guard against relapse, parasiticide applications should be continued for several weeks after the disease is apparently cured.

Vaccine therapy combined with local treatment has been proved to be advantageous. Stock or autogenous vaccine, 0.5 to 2.0 to 4.0 c.c., may be injected hypodermically every five or six days (Strickler). Strickler gives the following technique for preparing the vaccine: "Infected hairs are soaked in absolute alcohol for from fifteen to twenty-five minutes, then immersed in sterile salt solution, and transplanted by sterile forceps to 'French proof agar' medium contained in Erlenmeyer flasks. All the steps in the procedure are carried out under the usual laboratory technique. The cotton stoppers of the flasks are paraffined, and the flasks placed on top of the incubator and allowed to grow for twenty-four days. The growth is then removed with a sterilized platinum spade, care being taken to remove as little of the culture medium as possible, and treated for from ten to fifteen minutes with crystals of chemically pure sodium chloride. To this enough sterilized distilled water is added to make a normal saline solution." "From the growth on an ordinary Erlenmeyer flask, about 500 c.c. of vaccine is made up; and this is heated for one hour at 60° C., to kill the growth." Controls for living fungi are made on 'French proof agar,' and for pyogenic organisms on plain agar." "The vaccine is preserved by the addition of sufficient phenol to bring it up to 0.25 per cent. It is then tubed in sterile vials, and is ready for use."

By far the best treatment of ringworm of the hairy regions (excepting perhaps vaccine therapy) is by means of röntgenotherapy (*q.v.*). H. G. Adamson describes the treatment as follows: "If there be only one to three patches of ringworm, each patch may be treated separately by exposure through a circular hole cut in a sheet of lead, and large enough to include a good margin of healthy hair; or a lead-glass cylindrical localizer may be used. When there are more than three patches it is generally advisable to depilate the whole scalp.

This is done most conveniently by the "five-exposure" or "Kienböck-Adamson" method. By this method the forepart of the scalp, the crown, the occiput and sides of the head, each receive in turn a single Sabouraud pastille dose of X-rays. In order that there may be an even radiation of the whole scalp, it is necessary to aim the five doses at five equidistant points, and these points are to be carefully marked on the clipped or shaven scalp with a blue skin pencil. The first point is in the middle line, an inch or two behind the anterior margin of the hairy scalp. Five inches are measured backward from this point to mark the second point on the crown, and again five inches for the point on the occiput. The two lateral points are marked just above each ear, so that they are five inches from each of the three central points. The applications are best made with the patient lying down. The X-ray tube is enclosed in a lead-lined box shield which has a circular aperture of three to four inches in diameter, through which the rays pass towards the scalp. Around the aperture there are fixed three slender converging wooden pegs, the ends of which rest on the scalp and keep the shield and the contained tube at a fixed distance from the skin. The box must be so arranged that the blue pencil mark on the scalp is exactly in the middle of the points of the three pegs. The anticathode of the X-ray tube should be 6½ inches from the skin, and the Sabouraud pastille exactly midway between the skin and the target or anti-cathode. The five exposures are given at one 'sitting,' and the whole procedure occupies from an hour and a quarter to two hours. After the exposures no visible change occurs until the beginning of the third week. During the third week after the treatment, the hair falls, both healthy and diseased. The fungus is not destroyed, but merely comes away with the hair upon which it feeds. For six weeks or longer the parts which were exposed to the rays remain absolutely bald, and then the new and healthy hair begins to grow. In the course of a few weeks it may be an inch or so long. A mild antiseptic ointment (ung. hydrargyri amm. chlor. dil.) or lotion (tincturæ iodi, one ounce, spirit. vini methyl, seven ounces) is applied to the whole scalp daily during the treatment in order to disinfect the skin itself. The child is free from infection as soon as the hair has completely fallen." An overdose of the X-rays may cause permanent baldness, and even in rare instances a minimum dose in hypersusceptible individuals. An irritated or septic condition of the skin should be allayed before X-ray treatment is begun. Fair-haired individuals should be given rather smaller doses than those with dark hair.

During the exposure of the front of the vertex the forehead and eyes should be shielded by lead or rubber, and the ears and face should be likewise shielded during exposure of the sides of the head, and also the neck during exposure of the lower occiput.

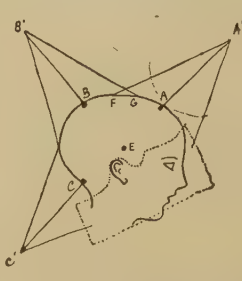


Fig. 97.—Diagram showing centres of area to be rayed. (Schall)

D. Ringworm of the Bearded Region.—Curable in several weeks to several months.

Use an ointment of salicylic and benzoic acids, sulphur, or mercury, as in tinea tonsurans. Keep the face shaved and the hairs of the affected area extracted. Adamson recommends oleate of mercury, 5 per cent., containing resorcin, gr. xv ad ℥i.

E. Ringworm of the Nail.—See Onychomycosis, under Nail Diseases.

Rodent Ulcer.—See Carcinoma Cutis.

Rosacea.—See Acne Rosacea.

Rubella; Rötheln.—See German Measles, in Part 11).

Run-around.—See Onychia, under Nail Diseases.

Sand-Flea.—See Bites.

Sarcoma Cutis.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor; L. *cu'tis*, skin. Primary sarcomata of the skin usually begin in old skin lesions, such as moles, warts, nævi, scars, sebaceous cysts, etc. If not completely removed a fatal issue is to be expected in from a few months to several years or more.

Treatment.—Remove the growths by a wide excision, followed by "vigorous X-ray (*q.v.*) exposures carried up to the point of acute reaction, and this followed by subsequent but somewhat less vigorous exposures at intervals of a few months for a year or more" (Pusey). At the same time give arsenic (*q.v.* in Part 11) hypodermically. Injections of erysipelas and prodigiosus toxines (Coley's fluid *q.v.*), may also be tried.

Scabies.—L., from *scab'ere*, to scratch. A common contagious disease, due to the acarus scabei (L., Gr. *ἄκαρι* mite), the female of which burrows in the epidermis, producing a minute, slightly elevated, black-dotted line consisting alternately of eggs and excrement, and causing itching and an acute papular

1. — *Herpes.*

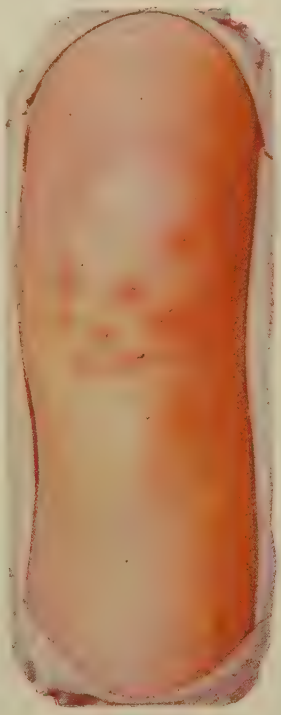
N° 1956. Dr Fournier.

2. — *Impetigo rodens.*

N° 2513. Dr Gaucher.

3. — *Scabies.*

N° 2077. Dr Hallopeau.



4. — *Hydroa.*

N° 1563. Dr Vidal.

St. Louis Hospital Museum, Paris.

SKIN DISEASES : **Scabies. Herpes. Hydroa. Impetigo.**

or papulo-pustular dermatitis, "predominantly upon the fingers, hands, wrists, axillary folds, lower abdomen, and genital and anal regions." It is readily cured.

Treatment.—A hot soap bath with thorough rubbing with a coarse washcloth or brush, to open up the burrows and other lesions, should be taken. One of the following parasiticides is then rubbed in vigorously over the affected area, if limited in extent, or else over the entire surface below the chin line, night and morning, for three or four days, the same underwear being worn continuously. Ten or twelve hours after the last application a bath is taken and the underwear and bed linen changed. The underclothing and bed linen should be boiled, or if of wool, baked, and the outer clothing baked or ironed with a very hot iron.

℞ Sulphuris sublimati,
Balsami Peruviani, aa..... ʒii–vi
Adipis benzoinati, q.s., ad..... ʒiv

Lard and not vaseline should be used as the base.

For adults, Stelwagon adds beta-naphthol, ʒi–ii, to the above, and Osler prescribes naphthol, ʒi to the ounce; but the drug may become absorbed and produce toxic symptoms, and is therefore, perhaps, better left out.

Pusey prefers the following:

℞ Sulphuris præcipitati,
Balsami Peruviani,
Crætæ preparatæ,
Saponis viridis, aa..... gr. xx–xl
Petrolati, q.s., ad..... ʒi
(Pusey.)

The writer has always used with success equal parts of balsam of Peru and alcohol.

It should be remembered that toward the last rubbing slight itching may again appear as a result of irritation caused by the parasiticide.

Where one, for instance a lumberman, is constantly exposed to contagion, he may keep his underclothing dusted with a small quantity of washed sulphur.

Scar.—See Keloid.

Scarlatinaform Rash.—See Erythema Scarlatinoides.

Scarlet Fever; Scarlatina.—See Part 1, General Medicine and Surgery.

Schönlein's Disease.—See Purpura.

Sclerema Neonatorum.—Gr. *σκληρός* hard; Gr. *νέος* new + L. *nátus*, born. An uncommon, diffuse, hard, stiff, leathery condition of the skin, occurring at or soon after birth, associated with subnormal temperature and depression of the respiration and pulse, and usually terminating fatally. The skin does not pit on pressure as in œdema neonatorum (*q.v.*).

Premature birth, diarrhœa, cardiac weakness, atelectasis, pneumonia, bad hygiene, and improper feeding are causative.

Treatment.—Treat the infant as directed under Premature and Delicate Infants (in Part 1). The child cannot suck, so must be fed by gavage. Very gentle friction of the body and limbs with oil toward the heart is useful. "The most important and beneficial measure," says Kerley, is the injection, subcutaneously and rectally, of hot normal saline solution (0.8 per cent.), three times a day.

Scleroderma.—Gr. *σκληρός* hard + *δέρμα* skin. An uncommon, chronic disease, characterized (1) by localized, circumscribed patches or bands of yellowish or pinkish, ivory-like induration, surrounded by faint lilac borders, and sometimes followed by atrophy (circumscribed scleroderma or morphœa—Gr. *μορφή* form), or (2) by a diffuse, symmetrical, usually pigmented, wax-like, rigid, stiffened, indurated, or hide-bound, sometimes œdematous condition of the skin, occasionally followed by atrophy (generalized scleroderma).

Etiology.—Possible causal influences are exposure to the sun, or to cold and wet, traumatism, exhaustion, nervous depression, infectious diseases, particularly acute rheumatism and erysipelas, Raynaud's disease, thyroid disease, local arterial disease.

The anatomical cause is a "sclerosis of the small arterioles of the skin, together with a general arteriosclerosis." (A. G. Gibson.)

Prognosis.—The outcome is uncertain. The circumscribed form disappears after several months, or it may last for years. The diffuse type is often fatal, although recovery may occur.

Treatment.—This has been unsatisfactory. A correct hygienic regimen should be observed, *e.g.*, adequate rest and exercise, well-ventilated apartments, but the avoidance of cold and draughts, flannel clothing, care of the skin and bowels, regular hours of eating and sleeping, rest before and after meals, nutritious food, with perhaps cod-liver oil, and tonics (see Drugs, Part 11) Meats should be reduced to a minimum. A daily hot shampoo and massage with bland oils is recommended to restore the circulation. General and local galvanism may be of some benefit. Electrolysis (see under Nævus Vascularis), or the X-rays (*q.v.*) may be tried. Thiosinamin is said to be worthless. Thyroid extract (*q.v.* in Part 11) is of doubtful utility. One may start with gr. $\frac{1}{10}$, twice daily, and gradually increase the dose to gr. v, twice daily, if practicable,

not allowing the pulse, with the patient at rest, to rise above 100. (Gibson.)

Scorpion Bites.—See Bites.

Scrofuloderma.—L. *scrof'ula*, sow-pig + Gr. δέρμα skin. See Tuberculosis Cutis.

Scrotal Pruritus.—L. *scrótum*, bag. See under Pruritus.

Sebaceous Cyst.—L. *seb'um*, suet; Gr. κύστις cyst. The treatment is excision under local cocaine or novocaine (see Part 11) anæsthesia, followed by closure of the skin incision with a fine silk subcutaneous suture.

Seborrhœa.—L. *seb'um*, suet; + Gr. ῥοία flow. Sebaceous hypersecretion, affecting commonly the nose, forehead, and scalp.

Possible etiological influences are general debility, anæmia, phthisis, severe constitutional diseases, especially the exanthemata, dyspepsia, intranasal pressure (causing nasal seborrhœa), contagion (see Dermatitis Seborrhœica)

Treatment.—Attend to any possible causal influence. Bathe the affected skin frequently with soap and hot water, and employ one of the following applications:

℞ Zinci sulphatis,
Potassii sulphureti, aa ..... gr. v–xx
Aquæ ..... ℥i
M. Sig.—Apply in sufficient strength and frequency to produce some irritation and desquamation. (Lotio alba.)

℞ Resorcinolis ..... gr. v–lx
Alcoholis ..... ℥iv

℞ Sulphuris præcipitati 1.0
Pulveris talci 4.0–5.0

For infants, employ oil followed by warm water and soap for the removal of adherent crusts, and apply one of the following ointments:

℞ Resorcinolis ..... gr. x
Adipis lanæ hydrosi ..... ℥i

℞ Sulphuris præcipitati ..... ℥i
Adipis lanæ hydrosi ..... ℥i

Seborrhœa Sicca.—L. *sic'cus*, dry. See Dermatitis Seborrhœica.

Seborrhœic Alopecia.—See Alopecia Seborrhœica.

Dermatitis.—See Dermatitis Seborrhœica.

Senile Skin Changes.—See Atrophia Cutis Senilis.

Shingles.—See Herpes Zoster.

Sloughing Phagedena, Tropical.—See Phagedena Tropica.

Smallpox; Variola.—See Part 1, General Medicine and Surgery.

Smoker's Patches.—See Leucoplakia Buccalis.

Snake-Bite.—See under Bites.

Sphaceloderma.—See Gangrene of the Skin.

Spider Nævus.—L. *næ'vus*, mask. See Telangiectasis.

Sting.—See Bites.

Sporotrichosis.—Gr. σπόρος seed + θρίξ hair. A chronic nodular or granulomatous, suppurative, ulcerative affection of the skin and subcutaneous tissues, sometimes with involvement of the mucous membranes, muscles, bones, etc., due to several forms of hyphomycetic fungus belonging to the sporothrix group. The nodules are subcutaneous lymphatic abscesses. The affection may be contracted from animals, especially the horse.

The disease is distinguished from tuberculosis, syphilis, and actinomycosis by culture of the organism and by the specific agglutinating and fixation properties of the patient's serum. To obtain cultures, transfer aseptically some of the light yellow pus to glucose-, maltose-, or blood-agar, and keep at room temperature. Circular growths with marked striation develop in ten to twelve days, which later may become black. Smears from these show branched mycelial filaments with terminal or lateral budded spores. In the living tissues these branched filaments are not found, but in their place elongated or oval bodies, often with budding processes. (Webster.)

Treatment.—Abscesses may be thoroughly opened and cleansed, and the lesions treated with an aqueous solution of iodine and potassium iodide, gr. xv of the former and ℥iiss of the latter to the pint, while potassium iodide (*q.v.* in Part 11) is given internally, as in actinomycosis. Adamson says that surgical treatment is "inadvisable."

The disease may be cured in from four to six weeks.

Stings.—See Bites.

Stomatitis.—Gr. στόμα mouth + -ιτις inflammation. See Part 1.

Straw-Itch.—See Grain-Itch.

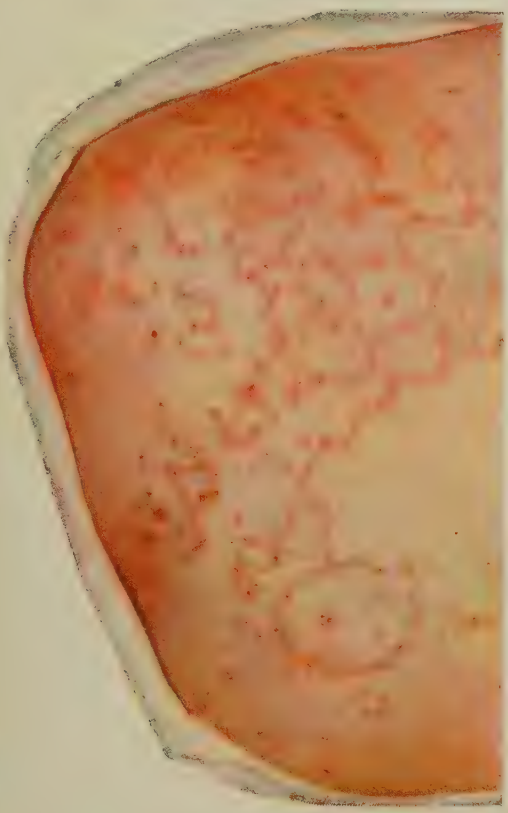
Strophulus.—L. See Miliaria.

Sudamen.—L. *suda're*, to sweat. An ephemeral, non-inflammatory, abundant eruption of sweat vesicles resembling dew-drops.

Sudamina occur often near the termination of acute febrile disorders, *e.g.*, typhoid, typhus, rheumatic, puerperal, and septic fevers, and also in conditions of depressed vitality, as in tuberculosis.

Treatment is scarcely required. The body may be sponged with equal parts of alcohol and water, dried, and dusted with a bland powder, such as starch or talcum.

Summer Eruption, Recurrent.—See Hydroa Vacciniforme.



1. — *Seborrhœa (seborrhœic eczema).*
N° 1944. Dr Fournier

2. — *Circinate tricophytosis.*
N° 2516. Dr Hallopeau.
St. Louis Hospital Museum, Paris.

3. — *Favus.*
N° 548. Dr Besnier.

4. — *Sporotrichosis.*
N° 2531. Dr de Beurman.

Seborrhœa. Sporotrichosis. Favus. Tricophytosis.

Sunburn.—Both for the prevention and treatment of sunburn and eczema solare, one may use pure calamine powder or calamine-zinc-oxide lotion:

℞ Calaminæ,
Zinci oxidi, aa ..... ℥ii
Acidi borici ..... ℥i
Glycerini ..... ♏xv
Liquoris calcis ..... ℥i
Aquæ, q.s., ad ..... ℥iv

Sweat, Colored.—See Chromidrosis.
Diminished.—See Anhidrosis.
Excessive.—See Hyperidrosis.
Stinking.—See Bromidrosis.
Suppression.—See Anhidrosis.
Vesicles.—L. *vesic'ula*, dim. of *vesi'ca*, bladder. See Sudamen.

Sycosis Vulgaris.—Gr. *σύκωσις*, *σύκον* fig; L. *vulgar'is*, common. An obstinate, chronic pustular folliculitis of the bearded and mustache regions, each pustule being pierced by a hair which is easily extracted.

Etiology.—The staphylococci aureus and albus are the usual infecting agents. Contamination from a nasal catarrh and ill health from any cause are sometimes causal.

Over indulgence in alcohol, tobacco, tea or coffee, and bromides have a deleterious influence.

Treatment.—Enjoin the observance of a correct hygienic regimen, *e.g.*, adequate rest and exercise, fresh air day and night, a daily morning tepid bath before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, rest before and after meals, a simple, nutritious, well-balanced ration, free bowel activity, and tonics, if indicated.

The face should be shaved every day or two, and all crusts removed. Before the antiseptic applications are made, any acute inflammatory action should be reduced by soothing remedies, such as cold cream, zinc oxide ointment or calamine lotion:

℞ Calaminæ,
Zinci oxidi, aa ..... ℥i–ii
Acidi borici ..... ℥i
Acidi carbolici ..... ♏x
Liquoris calcis ..... ℥i
Aquæ, q.s., ad ..... ℥iv
M. Sig.—Shake well, and dab on frequently.

After all inflammatory action has subsided, rub in morning and night, following a hot soap and water bath, one of the following ointments:

℞ Hydrargyri ammoniati ..... gr. x–℥i
Adipis lanæ hydrosi ..... ℥i

℞ Sulphuris præcipitati ..... gr. x–xlviii
Adipis lanæ hydrosi ..... ℥i

℞ Resorcinolis ..... gr. xxiv–xlviii
Adipis lanæ hydrosi ..... ℥i

℞ Acidi carbolici,
Tincturæ iodi,
Chlorali hydrati, aa ..... ℥i
M. Sig.—Pull out each affected hair, and touch each lesion with the solution.

Under this method of treatment, the duration of the disease is from two to twelve months. Shaving and cleanliness should be persistently practiced for months after an apparent cure, in order to prevent a relapse.

Ionic medication (*q.v.* in Part 1) is recommended. A zinc positive electrode may be inserted into the pustule, and a current of twenty to thirty milliampères employed for thirty minutes (see under Hypertrichosis). Ehrmann recommends the introduction of pyoktanin (10 per cent. solution) into the diseased follicles by cataphoresis: the anode, soaked in the solution, is applied to the part, and the cathode is held in the hand, or, perhaps, placed on the back of the neck.

Rapid and satisfactory results are obtained with the X-rays (*q.v.*), non-diseased parts being protected with lead foil. Give an erythema dose, unfiltered, at three or four weeks' intervals, although one thorough dose is generally sufficient (Knox). The hairs fall out, but reappear after some months. Care should be taken against the production of a permanent alopecia. No active local treatment should be employed during the X-ray treatment.

Syphilis.—See Part 1.

Tattoo Marks, Removal of.—The various methods employed are here described in the probable order of their usefulness.

1. Cover the areas, to no larger extent than one or two square inches at a time, with a concentrated solution of tannin. Tattoo this in with punctures close together, then rub the surface firmly with the silver nitrate stick. After several minutes wipe off the silver nitrate. An eschar forms which eventually drops off leaving a slight scar. (Variot.)

2. Cleanse the part thoroughly; then tattoo in a solution of thirty parts of zinc chloride in forty parts of water. Treat no larger surface than one or two square inches at a time. An eschar forms which eventually drops off, leaving a slight scar. (Brault.)

3. Punch the skin with a cutaneous trephine or punch, cut off the projecting disc of skin, and transplant a slightly larger

disc of healthy skin made by a larger trephine. If, however, the area to be removed is large, use the punch on several parts of its surface, and apply a dressing of one part acetanelid and seven parts boric acid. After healing has occurred, treat new areas in the same manner.

4. Electrolysis, applicable only to small spots, because of the resulting scarring.

Introduce the needle, attached to the negative pole of a galvanic battery, from the edge of the spot slantingly toward the centre, at intervals of about one-eighth of an inch apart. A current of one, to four, to five, to ten milliampères is allowed to act for one-half to one minute, or a trifle longer at each insertion of the needle. If any pigment remains after the crust has been cast off, repeat the process.

5. Excision.

Teething Rash.—See Miliaria.

Telangiectasis.—Gr. τέλος end + ἀγγεῖον vessel + ἔκτασις dilatation. Telangiectases are acquired cutaneous capillary dilatations or angiomata. The so-called spider nævus presents the appearance of a red dot with radiating dilated capillaries. The very common and interesting "papillary ectases" are pinhead to small pea-sized, crimson to purplish red, flattened or rounded, raised angiomata. They occur in depraved conditions of health, and may be found in children as well as in adults, in the obese as well as in the thin and emaciated. Telangiectasis occurs in acne rosacea, morphœa, lupus erythematosus, lupus vulgaris, syphilis, angiokeratoma, xeroderma pigmentosum, the senile skin, X-ray dermatitis, purpura annularis telangiectodes.

Treatment.—Electrolysis is usually employed (see Acne Rosacea.) The dilated capillaries may also be slit up with a sharp knife and cauterized with carbolic acid.

Thromboangitis Obliterans.—Gr. θρόμβος clot + ἀγγεῖον vessel + -ιτις inflammation. See under Gangrene of the Skin.

Tinea Axillaris.—L. *tĭnea*, moth; *axil'la*, arm-pit. See under Ringworm.

Barbæ.—See under Ringworm.

Circinata.—L. *circŭlus*, ring. See Ringworm.)

Cruris.—L. *crus, crur'is*, leg. See under Ringworm; and Dhobie Itch.

Tinea Imbricata.—L. *tĭnea*, moth; *imbricātus*, overlapping, from *imb'rex*, tile. A tropical, local, contagious, fungus disease, characterized by the formation of brown patches in the shape of concentric, imbricated scaly rings.

The mycelial fungus may be demonstrated by microscopic examination after soaking for fifteen minutes in liquor potassæ.

Treatment.—After removal of the scales by scrubbing with hot water and soap, or by means of alkaline baths (sodium bicarbonate, two to six ounces to the thirty-gallon bath), rub in petroleum once or twice daily for fourteen days, no bath being taken during this time; or paint on linimentum iodi (see Part 11) to a limited area each day; or try Whitfield's salicylic and benzoic ointment (see Ringworm) which is highly praised for ringworm. The underwear, etc., should be disinfected by boiling. The disease is readily cured, but strict cleanliness must be observed in order to guard against relapse.

Tinea Nodosa.—L. *nod'us*, knot. See under Hair Diseases.

Sychosis.—Gr. σύκον fig. See Ringworm.

Tonsurans.—L. *tonsur'a*, shaving. See Ringworm.

Trichophytina.—See Ringworm.

Tinea Versicolor.—L. *ver'sio*, turning + cólor, tint. A common, trivial, persistently recurring, slightly contagious, local fungus disease, occurring chiefly on the trunk, characterized by brownish yellow, furfuraceous, macular patches.

The mycelial fungus may be demonstrated by soaking the scales in liquor potassæ for fifteen minutes and examining microscopically.

Treatment.—Scrub the affected area daily with soap and hot water, in order to remove the scales; then dry, and rub in, twice daily, sodium hyposulphite solution, ʒi–ii ad ʒi, either alone, or followed immediately by tartaric acid solution, gr. xv ad ʒi. The latter causes the liberation of nascent sulphur and sulphurous acid in the skin. Sulphur (*q.v.* in Part 11) may be given internally. The underwear, etc., should be boiled, baked, or soaked in the hyposulphite solution.

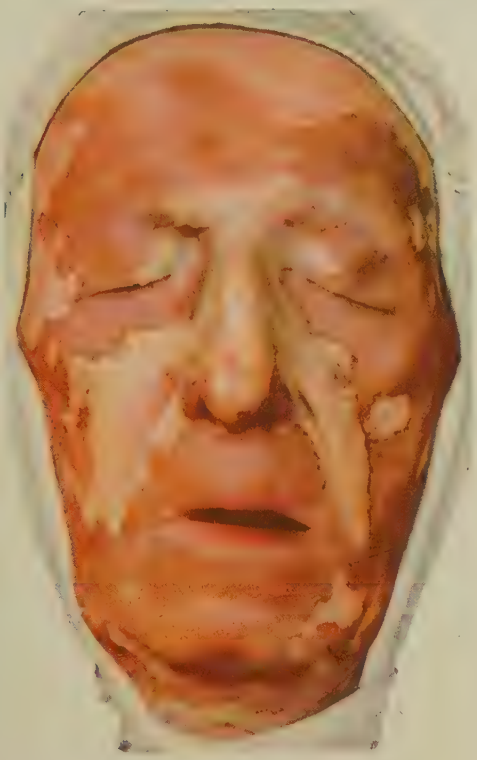
After an apparent cure, continue to apply the parasiticide once or twice a week for two or three months in order to guard against recurrence.

The disease is usually cured in one to three months.

Toe-Nail Affections.—See Nail Diseases.

Tongue Diseases.—1. Atrophy, due to hypoglossal nerve paralysis, occurring in bulbar paralysis (*q.v.* in Part 1), and sometimes in tabes, meningitis, plumbism, trauma, tumors, scars, bone disease.

2. Black Tongue.—A rare affection, due to hyerkeratosis of the lingual papillæ, which usually disappears spontaneously after a period of weeks, months, or years. Treatment is of no avail.



1. — *Vitiligo.*
N° 350. Dr Lallier.

2. — *Herpes zoster ophthalmicus.*
N° 1871. Dr Danlos

3. — *Zona.*
N° 85. Dr Lallier.

4. — *Urticaria.*
N° 237. Dr Lallier.

St. Louis Hospital Museum, Paris.

Urticaria. Vitiligo. Zona.

3. Furrowed Tongue.—Cleanliness is all that is required.

4. Geographic Tongue (*q.v.*)

5. Glossitis Acuta (see Part 1).

6. Glossitis Exfoliativa (see Geographic Tongue).

7. Glossitis, Mœller's (see Glossodynia Exfoliativa).

8. Glossitis Papillaris (see Glossitis, in Part 1).

9. Glossodynia (see Part 1).

10. Glossodynia Exfoliativa (*q.v.*)

11. Hypertrophy or Macroglossia (*q.v.* in Part 1).

12. Leucoplakia (*q.v.*)

13. Lingual Tumors and Cysts (see Part 1).

14. Macroglossia (see Part 1).

15. Plaques, Transitory, Benign (see Geographic Tongue).

16. Psoriasis Linguæ (see Leucoplakia).

17. Ulcers (see Glossitis, in Part 1).

Transitory Benign Plaques of the Tongue.—See Geographic Tongue.

Trichiasis.—Gr. *τριχίασις* inverted hairs. See under Hair Diseases.

Trichophytia.—See Ringworm.

Trichorrhexis Nodosa.—Gr. *θρίξ* hair + *ῥῆξις* fracture; L. *nod'us*, knot. See under Hair Diseases.

Tropical Sloughing Phagedena.—See Phagedena Tropica.

Tropical Sore.—See Oriental Sore.

Tubercle, Anatomic.—See Tuberculosis Cutis.

Tuberculides.—A group of skin eruptions which occur in association with systemic tuberculosis. They are described under Acne Varioliformis. Lichen Scrofulosus and Erythema Induratum.

For local skin tuberculosis, see Tuberculosis Cutis.

Tuberculosis Cutis.—L. *tuber'culum*, nodule; *cútis*, skin. Tuberculosis of the skin includes (1) the extremely rare Tuberculosis Ulcerosa, or miliary tuberculous ulcers or nodules of the skin, occurring almost exclusively about the mucous outlets in those with internal tuberculosis; (2) The uncommon Tuberculosis vel Lupus Verrucosa (Anatomic Tubercle; Post-Mortem Wart; Verruca Necrogenica), occurring usually on the back of the hand in autopsy performers, and characterized by a warty development on an infiltrated but not nodular base; (3) the more common Scrofuloderma, a suppurating dermatitis usually presenting sinuses and secondary to tuberculous adenitis or other subcutaneous tuberculous process; and finally, (4) Lupus Vulgaris, characterized by deep, brownish red or apple-butter-colored nodules and infiltrated patches.

Treatment.—This is fully considered under Lupus Vulgaris. The treatment of Scrofuloderma, however, is chiefly surgical.

Tylosis.—Gr. *τύλωσις* callosity. See Callositas.

Ulcerating Granuloma of the Pudenda.—L. *ulcus*, ulcer; *granulum*, granule + Gr. *-ωμα* tumor; L. *pudére*, to be ashamed. A tropical, auto-inoculable, chronic recurrent, ulcerating granuloma, without constitutional symptoms.

Treatment.—It is probably best to excise the entire growth, if it is not too large. Scraping and the application of chemical caustics or the actual cautery may be employed. Tartar emetic is probably a specific. Give it intravenously (*q.v.* in Part 1), every second day, beginning with 5 c.c. of a 1 per cent. solution (sterilized by filtering cold through a Berkefeld filter), and increasing to 10 to 12 c.c. Twenty or more injections are said to be required for a cure; but occasionally there is recurrence. Vicente Pardo reports cures after about five injections.

Ulcers, Cutaneous.—See Part 1, General Medicine and Surgery.

Ulcers, Lingual.—L. *ling'ua*, tongue. See Glossitis, in Part 1.

Mouth.—See Stomatitis, in Part 1.

Tongue.—See Glossitis, in Part 1.

Uncinarial Dermatitis.—See Ground-Itch.

Urticaria.—L. *ur'tica*, a nettle. A common, acute or chronic inflammatory affection of the skin, characterized by the sudden occurrence of various sized, usually evanescent wheals, of a pink or reddish color, or white with a pinkish areola, and accompanied by itching. A wheal is a circumscribed œdema of the corium. Giant urticaria is also called angioneurotic œdema (*q.v.*).

Etiology.—A special idiosyncrasy is the important predisposing cause. The exciting causes are many: bites or poisoning or irritation produced by wasps, bees, mosquitoes, fleas, pediculi, bed-bugs, scabies, jelly-fish, certain kinds of caterpillars, stinging nettle, formalin, scratching, poulticing, galvanization, sudden chilling, rarely sun heat; certain foods, oysters, clams, lobsters, crabs, shrimps, mussels, fish, pork, sausage, veal, mutton, eggs, cheese, butter, mushrooms, strawberries, tomatoes, cucumbers, oatmeal, buckwheat, nuts; certain drugs, copaiba, cubebs, opium, salicylates, iodides, mercury, arsenic, quinine, chloral, turpentine, valerian, coal-tar products, formalin, antitoxines or sera; certain odors; intestinal worms, intestinal catarrh, dyspepsia; gout and

rheumatism; cholelithiasis; jaundice; albuminuria; glycosuria; purpura; malaria; uteroovarian disease; neuralgia, locomotor ataxia, hysteria, emotional disturbances, emigration; asthma; eye-strain; surgical operations; anæmia; hydatid fluid absorption; tapping a pleuritic effusion; phimosis; focal infection, etc. The affection may be a manifestation of anaphylaxis (*q.v.* in Part 1).

Prognosis.—Acute urticaria is transitory, but recurrences are common. The prognosis in chronic urticaria depends upon the ability to discover and remove the cause.

Treatment.—Acute urticaria probably usually has its origin in the gastro-intestinal tract, so that a brisk calomel and saline purge is indicated, followed, as is advised, by large doses of sodium bicarbonate (see Part 11 for drug dosage and formulæ).

Chronic urticaria calls for a searching investigation into the cause. The diet should be simple and bland, tea, coffee, alcohol, and all possibly provocative foods being avoided. Large quantities of water, eight to ten glasses a day between meals, should be drunk. A glass of water containing sodium bicarbonate may be taken one hour before each meal and also between meals. The bowels should be kept active. A daily hot bath of from ten to thirty minutes duration, especially alkaline baths which relieve itching (sodium bicarbonate or sodium biborate or ammonium chloride, one or two ounces to the thirty-gallon bath), is beneficial. Nervous sedatives are sometimes of value, *e.g.*, bromides, phenacetin, antipyrine, acetanelid, sulphonal, trional, chloral, etc. (see Part 11).

Empirical remedies, so called, are pilocarpine, calcium chloride; yeast preparations, quinine, atropine, strychnin, arsenic. Pusey prefers pilocarpine in doses sufficient to produce a very slight increase of the perspiration (see Part 11).

Local antipruritic remedies follow:

℞ Acidi carbolici ..... ʒss–i
Glycerini ..... ʒss
Alcoholis ..... ʒi
Aquæ, q.s., ad ..... ʒviii
(Stelwagon.)

℞ Thymolis ..... gr. viiss–xv
Glycerini ..... ʒii
Alcoholis ..... ʒii
Liquoris potassæ ..... ʒi
Aquæ, q.s., ad ..... ʒviii
(Stelwagon.)

℞ Mentholis ..... gr. xx–xl
Camphor-chlorali,
Acidi carbolici, aa ..... gr. xx–lx
Ext. hamamelidis destil.
Alcoholis, aa ..... ʒii
(Pusey.)

℞ Calaminæ,
Zinci oxidi, aa ..... ʒi–ii
Acidi borici ..... ʒi
Glycerini ..... ♏x
Acidi carbolici ..... ♏xv–xxx
Liquoris calcis ..... ʒi
Aquæ, q.s., ad ..... ʒiv
(Calamine lotion.)

℞ Pulveris acidi borici ..... ʒss–i
Pulveris zinci oxidi, seu talci,
seu amyli, seu zinci stearatis . ʒi

℞ Pulveris acidi salicylici, seu resorcinolis, seu thymolis ..... gr. v–xx
Pulveris zinci oxidi, seu talci,
seu amyli ..... ʒi

Apply the powders after the bath or lotion.

Urticaria, Giant.—See Angioneurotic Œdema.

Urticaria Pigmentosa.—L. *ur'tica*, nettle; *pigmen'tum*, paint. A very rare, urticaria-like, itching, recurring eruption of wheals (circumscribed œdema of the corium), followed by persistent pigmented macules or nodules, which can be changed into wheals by rubbing.

It occurs as a rule in infants, and usually subsides as puberty is approached; but it may come on at puberty, or even later.

Treatment.—The disease may be treated experimentally like urticaria, but little except the relief of itching can usually be accomplished.

Vaccinia; Cow-Pox; Vaccination.—See Part 1.

Varicella; Chicken-Pox.—See Part 1.

Variola.—See Smallpox, in Part 1.

Venereal Wart.—L., *ven'us*. See under Verruca.

Verruca; Wart.—L. *verru'ca*, wart. A wart consists of hypertrophied epidermis and papillæ.

Classification.—1. Verruca Vulgaris, the ordinary wart or simple papilloma, probably mildly contagious.

2. Verruca Plana Juvenilis, multiple flat warts, resembling somewhat lichen planus.

3. Verruca Senilis, the pigmented, flat, greasy wart of old people (see Atrophia Cutis Senilis).

4. Verruca Acuminata.—Pointed condyloma, venereal wart, moist wart, fig wart, cauliflower excrescences, vegetations—contagious, skin-colored, pink or purplish red, finger-like vegetations, resembling cauliflower, cockscomb, bunch of grapes, or mulberries.

Causes.—Uncleanliness, irritating discharges, congestion and leucorrhœa of pregnancy, gonorrhœa, syphilis, etc.

5. Flat Condyloma or moist papule of

secondary syphilis—modified mucous patch: "soft, grayish, with a broad base."

6. Verruca Telangiectatica or Angiokeratoma (*q.v.*).

Treatment.—1. Verruca Vulgaris.—To remove isolated warts, one of the following methods may be selected:

(a) Pick up the wart with toothed forceps, and cut it off below the base with a sharp knife; suture the skin with catgut, or cauterize the wound with pure carbolic acid or silver nitrate applied with a matchstick.

(b) First freeze the wart with ethyl chloride, then snip it off with curved scissors, or curette it thoroughly, and after the bleeding has ceased, paint the base with pure carbolic acid followed by a light application of nitric acid; or cauterize the base lightly with zinc chloride.

(c) Freeze the wart with carbon dioxide snow or liquid air. Press a pencil of carbon dioxide snow, of the same diameter as the wart, firmly on the latter until it is frozen to its base. This may be repeated, if necessary, every two or three weeks.

(d) Employ electrolysis; attaching the needle to the negative pole and the moistened positive electrode applied near-by, make one or two insertions into the base of the wart, allowing the current to act for one-half to one or two minutes, as to the size of the growth and the strength of the current, the latter varying between one and four or five milliampères; or ionization may be employed with a zinc-positive needle, the latter being inserted into the deep layers of the epidermis, not into the true skin or corium or dermis, and a current of one or two milliampères employed for one to six minutes.

(e) Curette warts occurring beneath the nail, and then cauterize with the Paquelin or galvanocautery.

(f) Pedunculated and filiform warts may be ligatured with silk, or snipped off, and silver nitrate applied to the base. The galvanocautery, however, is safer in large pedunculated warts owing to their vascularity.

(g) Employ the high frequency current (*q.v.* in Part 1, under Medical Electricity).

(h) Employ radium (*q.v.*: 10–30 min. exposure) or the X-ray (two or three thorough exposures of the latter, *q.v.*).

(i) After paring, scraping, or sandpapering the wart down, and protecting the surrounding skin with vaseline, apply repeatedly and cautiously with a matchstick or glass pen or rod, a strong caustic, *e.g.*, liquor potassæ (*q.v.* in Part 11), salicylic acid, 10 to 20 per cent. in collodion, glacial acetic acid, chromic acid, nitric acid, zinc chloride, lactic acid, acid nitrate of mercury, etc. This treatment is not as satisfactory as the preceding methods.

2. Multiple Flat Warts or Verruca Plana Juvenilis.—Multiple small flat warts may be ionized with magnesium sulphate, 5 per cent. solution, using a carbon anode and a current of ten milliampères for fifteen minutes; or a rod of metallic magnesium may be used as the anode for individual warts (see Ionic Medication, in Part 1). The warts should first be pricked with a needle. They disappear in three to four weeks after a single treatment.

Radiotherapy ("a few applications of moderate intensity"—Pusey) may be employed (see Röntgenology in Part 1).

Hyde and Montgomery recommend the daily inunction of Vleminckx's solution:

℞ Calcii hydroxidi..... ʒss
Sulphuris sublimati..... ʒi
Aquæ destillatæ..... ʒx
Boil down to six ounces and filter.

S. E. Dore says: "Multiple flat warts on the face are best treated with an ointment of sulphur and salicylic acid."

℞ Sulphuris præcipitati..... ʒi–iss
Acidi salicylici..... gr. x–ʒi
Petrolati mollis,
Adipis lanæ hydrosi, aa..... ʒss

Individual warts may be snipped off with scissors and pure carbolic acid applied to the base with a match.

Certain internal drugs have been reputed to be curative, *e.g.*, magnesium sulphate, gr. ii–iii, t.i.d., for children, ʒss, t.i.d., for adults; liquoris potassii arsenitis, ♏¼ + for children, ♏ii–v for adults, t.i.d.a.c., well diluted; nitrohydrochloric acid (*q.v.* in Part 11); tincture of thuja ♏v in water, t.i.d.; thyroid extract (*q.v.*); lime-water (*q.v.*); but C. J. White has in recent years obtained much more certain results with the administration of protiodide of mercury in pill form, gr. ¼, t.i.d. One recalls the value of mercury in the treatment of lichen planus.

3. Verruca Acuminata.—See Part 2.

4. Condyloma Syphilitica.—Employ local antiseptics and specific internal medication (see Syphilis, in Part 1).

Verruca Necrogenica.—L. *verrúca*, wart; νεκρός corpse + γεννᾶν to produce. See Tuberculosis Cutis.

Verruga Peruana.—See Peruvian Wart.

Vitiligo.—L. See Leucoderma.

Von Recklinghausen's Disease.—See Fibroma.

Vulvar Pruritus.—L., *vulv'a*. See Pruritus.

Wandering Rash of the Tongue.—See Geographic Tongue.

Wart.—See Verruca.

Peruvian.—See Peruvian Wart.

Post-Mortem.—See Tuberculosis Cutis.

Senile.—See Atrophia Cutis Senilis.

Venereal.—See under Verruca.

Wasp-Sting.—See Bites.

Wen.—See Sebaceous Cyst.

White-Leg.—See Thrombosis in Part 1.

Xanthoma; Xanthelasma.—Gr. *ξανθός* yellow + *-ωμα* tumor; *ἔλασμα* plate. A fibrofatty neoplasm, appearing as soft, pinhead to wheat-grain to bean-sized, chamois-yellow plates or nodules embedded in the corium.

Two varieties are recognized, viz., xanthoma planum, occurring usually about eyelids, and xanthoma tuberosum seu tuberculatum seu multiplex, general in distribution.

Etiology.—Heredity, migraine, and jaundice bear some relation to the disease.

Prognosis.—The disease is usually persistent, recurrence after apparent removal common.

Treatment.—The following methods of treatment are available:

1. Electrolysis (for xanthoma palpebrarum). With needle attached to the negative pole of galvanic battery, and moistened positive pole applied near-by, puncture growth superficially, at several points if large, using current of one to five milliampères, for one-half to one or two minutes, according to size of growth and strength of current. Treat but a portion of growth at a time if very large. Treatment may have to be repeated at intervals of two to four weeks. (Stelwagon.)

2. Application of trichloracetic or monochloracetic acid, cautiously, in scant quantity, only to portion of growth at a time if large. Second or third application may be required.

3. Series of punctures, at intervals of one or two millimetres, with fine galvanocautery needle, repeat every two weeks until cured. (Sabouraud.)

4. Röntgenotherapy (*q.v.* in Part 1).

5. The high frequency current (see Medical Electricity in Part 1).

6. Deep freezing under pressure for ten or fifteen seconds with liquid air or solid carbon dioxide. (Suggested by Pusey.)

7. Excision.

8. The continued application of a 25 per cent. salicylic acid plaster, or salicylated collodion, ℥i ad ℥i, for several days, or until the nodules are so softened that they can be curetted out (for xanthoma multiplex).

Xanthoma Diabeticorum.—Gr. *ξανθός* yellow + *-ωμα* tumor. Very rare, slightly itching eruption, of sudden evolution, observed usually in diabetics, characterized by multiple, pinhead to pea-sized, inflammatory, red, papular or nodular elevations, most of which present a central, chamois yellow, fatty tip.

Prognosis.—The eruption usually disappears spontaneously in a few months or years.

Treatment.—Treat the causal diabetes (*q.v.* in Part 1). For itching, prescribe some one of the antipruritic remedies given under Pruritus.

Xeroderma.—Gr. *ξηρός* dry + *δέρμα* skin. See Ichthyosis.

Xeroderma Pigmentosum.—Gr. *ξηρός* dry + *δέρμα* skin; L. *pigmentum*, paint. Very rare, congenital disease of skin, predominantly of the exposed parts, beginning usually in early childhood, and characterized by the appearance of numerous freckles, which become interspersed with atrophic white spots and crimson telangiectases, followed by keratoses and ulcerations, finally, after ten to thirty years, epitheliomatous or cancerous tumors. Nearly always occurs in several children of a family.

Prognosis.—This is very bad, but death may be delayed many years.

Treatment.—Protect exposed parts of body against sun and wind, which are probably exciting causes of affection. Employ boric acid solution for the eyes, gr. x ad ℥i, and cleanliness and bland ointments, such as boric ointment, 10 per cent., for ulcers. Epitheliomata may be excised or otherwise destroyed as described under Carcinoma Cutis.

X-Ray Dermatitis.—Three degrees of reaction, as in thermal burns, *e.g.*, (1) erythema, (2) vesiculation, (3) ulceration. First and second degree reactions may last several weeks; deep ulceration may persist for months or years. Reaction may appear day or two after exposure or as late as 3 or 4 weeks. [An electrical erythema may occur within 3 to 8 hours, lasting 1 or 2 days.] Erythema is frequently followed by temporary pigmentation and alopecia, latter sometimes permanent. Alopecia, telangiectasia and atrophy may follow as late as 6 to 12 months after a single erythematous reaction. Usually follow second degree burns, and keratoses may develop years afterward.

Causal Influences.—Excessive dosage; exposures at too brief intervals; acquired hypersusceptibility (common); idiosyncrasy (rare); youth; blonde complexion; female sex; face and flexor surfaces; local applications of such drugs as mercury, iodine, sulphur, iodoform, chrysarobin, tar, etc. (made even after exposure); certain skin diseases (acute inflammatory or congestive dermatoses, eczema, psoriasis, acute lichen planus, mycosis fungoides).

Treatment.—Apply ung. zinci oxidi, 10 per cent., containing ichthyol, 1 per cent., or wet dressing of aluminium acetate. Anæsthesin, 10 per cent., may be added to either, for pain. A deep, indolent ulcer should be excised.

Keep exudate away from normal skin, to avoid a generalized acute eczema.

Yaws.—See Frambesia.

Zona.—L., girdle or belt. See Herpes Zoster.

Zoster.—Gr. *ζωστήρ* girdle. See Herpes Zoster.

APPENDIX

The Skin Armamentarium.—1. Office and Operating Room Equipment.—Electrolysis outfit with platinum or iridoplatinum needle; X-ray; radium; scissors; knives; comedo-extractor; dermal curette; fine probe; one-inch cupping-glass; tin or lead foil, at least $\frac{1}{50}$ inch in thickness, for protecting skin in X-ray work; Paquelin cautery; gauze; curette; galvano-cautery; galvanic, faradic, and high-frequency currents, with rheostat and milliampèremeter; static electricity; metallic brush or comb attached to faradic battery; hot water bags; air cushions; cotton wool; water-bed; rubber rings; silver foil; flannel; rubber plaster for making medicated plasters; Bier's cupping glasses; glass rod; adhesive plaster; linen; lint; grooved director; oiled silk; bandages; wool; forceps; gauze bandage; scrotal suspensory bag; Martin india-rubber bandage; gutta-percha tissue; double oatmeal boiler for water bath; broad brush for applying gelatine preparations; crêpe (elastic) bandage; epilating forceps; absorbent cotton; écraseur; magnifying lens; ultraviolet or Finsen light; triangular-edged cataract needle; needle-holder, needles, fine silk, catgut; silkworm-gut; chromicized catgut; fine file; cutaneous trephines; curved scissors; self-retaining cutaneous retractor; mouse-toothed forceps; artery clamps.

Ionization Outfit.—See Ionic Medication, in Part 1.

Skin Grafting Instruments.—Razor; broad-bladed spatula; teasing needles.

2. Internal Drugs Mentioned in the Text.—(a) Tonics and Alteratives (L. *to'nus*, tone; *altera're*, to change).—Codliver oil; iron; arsenic; potassium iodide; ferrum sulphate; sulphuric acid, dilute; tincture of nux vomica; infus. gent. comp.; ac. nitro-hydrochl.; dil. sodium benzoate; tincture of cardamom; Fowler's solution; Blaud's pills; elixir ferri, quininæ, et strychninæ phosphati; sodium cacodylate; strychnine; gold chloride; tr. ferri chloridi; salicin; sodium salicylate; calcium sulphide; fibrolysin; creosote; biniodide of mercury; Asiatic pills; syrup of hypophosphites; fresh brewer's yeast or ordinary yeast cake; furunculin (yeast powder); ceridin (yeast fat); thyroid extract; quinine sulphate; quinine hydrochlorate; thiosinamin; chaulmoogra oil (olei gynocardiæ); magnesium seu sodium gynocardatis; balsam seu ol. jejunæ; hoang-nan; sodium iodide; hydrarg. sozoiodol.; protiodide of mercury; vinum antimon.; sodium or ammonium benzoate; ammonium chloride; iodothyrin; tartaric acid; tincture of thuja; creosote; syrup of ipecac; ext. pinus canadensis; urotropin.

(b) Diuretics (Gr. διά through + οὖρον urine).—Potassium acetate, citrate; and bicarbonate; cream of Tartar, Basham's mixture.

(c) Diaphoretics (Gr. διά through + φορεῖν to carry).—Pilocarpine hydrochloride; spt. æth. nitrosi; liq. ammonii acetatis.

(d) Antacids.—Sodium bicarbonate; calcined magnesia or magnesium oxide; lime-water; Vichy.

(e) Purgatives (L. *purga're*, to cleanse).—Rochelle salt; Friedrichshall water; Hunjadi János water; magnesium sulphate; pulv. rhei; fl. ext. cascara sagrada; castor-oil; calomel; colchicum; aromatic fl. ext. cascara; liq. mag. citratis.

(f) Vehicles and Flavors.—Aq. menth. pip.; spt. menth. pip.; infus. aurantii amari corticis comp.; ac. phosphor. dil.; syr. zingiberis; sacchar. alb.; liq. Hoffmannii; syrup of raspberry; aq. laurocerasi; aq. camphoræ; syr. simplicis; syrup of orange; cinnamon water; syr. tolutani; ol. sesami; ol. limonis comp. tr. lavand.

(g) Nervous Sedatives (L. *sedo*, I allay).—Morphine; tr. belladonna; ext. cannabis indica; ext. opii; bromides; asafœtida; acetanelid; antipyrine; phenacetin; tr. opii; ether; chloral hydrate; aspirin; atropine; tr. cannabis indica; tr. gelsemii; lactophen; sulphonal; lupulin; trional; codeine; paregoric; Dover's powder; whiskey; spirits of chloroform.

(h) Cardiovascular Drugs.—Nitroglycerine; nitrites; ammonia; strychnine; atropine; adrenalin; calcium lactate, chloride, and bromide; ergot; ether; aconitin; tr. aconite; brandy; whiskey; aromatic spirits of ammonia.

(i) Acids.—Dilute hydrochloric, sulphuric, and nitro-hydrochloric acids.

(j) Anhidrotics (Gr. ἀν without + ὕδωρ water).—Atropine; tr. belladonna; agaracinate of sodium or lithium; agaracin; camphoric acid; muscarin; picrotoxin; fl. ext. hydrastis; fl. ext. ergot; bromural; infus. salviæ (sage); fl. ext. salviæ; aromatic sulphuric acid; sodium or potassium tellurate; tr. cocculus indicus.

(k) Vaccines and Sera.—Vaccine virus; diphtheria antitoxine; mallein; leprolin; Sclavo's serum; antistreptococcus serum; antistaphyloccus serum; Moser's serum for scarlet fever; tuberlin R (T.R.); antivenene; Coley's mixed toxines of erysipelas and bacillus prodigiosus.

3. Local Medicaments Mentioned in the Text.—(a) Antiseptics; Parasiticides; Astringents; Stimulants.—Benzoic acid; zinc sulphate; potass. sulphuret.; deodorized benzine; bichloride of mercury; ammoniated mercury; cinnabar; sulphur præcipitat.; resorcinol; boric acid; carbolic acid; tincture of green soap; lime; sublimed sulphur; ichthyol; salicylic acid; tr. benzoin; beta-naphthol; formalin; tincture of iodine; iodoform; silver nitrate; copper sulphate; liq. iodi comp. (Lugol's solution); iodine; oil of eucalyptus; alcohol; chrysarobin; liq. ammon. fortis; spt. rosmarini; castile soap; tar soap; thymol; ung. hydrarg. nitratis; oil of cade; spt. myrciæ; ether; caustic potash; potassium chlorate; chromic acid; comp. tr. benzoin; iodol; aristol; peroxide of hydrogen; balsam of Peru; spirits of camphor; ext. hamamelidis destil; kerosene; pyrethrum powder; pennyroyal oil; oil of cassia; oil of turpentine; calcium hypochlorite; potassium permanganate; alum acetate; picric acid; Squibb's compound alum powder; boric ung.; sodium carbonate; sodium borate; potassium carbonate; lactic acid; carbolic acid crystals; acetic acid; radium; acidi arsenosi pulveris; hydrarg. sulph. rub.; ammon. chl.; zinc chloride; tr. benzoin; nitric acid; liq. carbonis detergens; ung. epicarin; liq. sodæ chlorinatæ; sodium benzoate; sodium sulpho-carbolate; lotio nigra, or black wash; hydrarg. oxidi flavi; liq. plumbi subacetatis; comp. tr. picis liquidæ; pix liquida; liq. plumbi subacet. dil.; infus. picis liq.; diachylon ointment; gallic acid; methylene blue; europhen; trichloracetic acid; liq. alum. acet.; biniodide of mercury; hydrarg. bisulphuret.; oil of wintergreen; pyrogallic acid; ung. sulphuris; ung. picis liquidæ; spt. vini rectif.; sod. hyposulphite; myrrh; ung. iodoformi; alum; tr. jaborandi; plumb. acet.; benzine; pyrogallol; creolin; tannoform; zinc peroxide; yellow oxide of mercury ointment; neutral acetate of lead; Dobell's solution; glycerite of tannic acid; liq. hydrarg. nitratis; spt. vini; ol. rusci; glacial acetic acid; nitric acid; oleate of tin; ung. hydrarg.; ung. hydrargyri nitratis dil.; lime; liq. sodæ chloratus; absolute alcohol; tr. eucalyptus; liq. antisepticus; tr. krameria; tr. myrrh; fuming nitric acid; oleate of zinc; ceratum plumbi subacetatis; subsulphate of iron; ung. gallæ et opii; hazeline; oleate of mercury; pyoktanin; liniment iodi; glyc. of tannic acid; thymol; Lœffler's solution; ung. Credé; lysol; comp. chalk powder; comp. cinnamon powder; tannic acid; emplast. plumbi; emplast. saponis; emplast. hydrarg.; perchloride of iron.

(b) Emollients; Protectives; Vehicles (L. *emol'lio*, I soften).—Ol. coca-nucis; petrolatum molle; glycerine; benzoinated lard; adeps; cold cream; liq. gutta-percha; zinc oxide; terra silicea; olive-oil; cotton-seed oil; paraffin wax (Stanolind surgical wax); flexible collodion; petroleum jelly; lanolin; sweet-almond oil; castor-oil; sevum præpar.; starch; talcum; liquid albolene; cocoa butter; bismuth; calamine; linseed oil; wheat flour; rice-flour; pulv. acacia; zinc stearate; zinc oxide ointment; resin cerat.; bran; liquid vaseline; glycerinum amylum; mucilago seminum cydoniorum; gelatine.

(c) Counter Irritants.—Mustard; tincture of iodine; croton oil; tr. cantharidis; tr. capsici; lin. saponis (camph.); cataplasma kaolini.

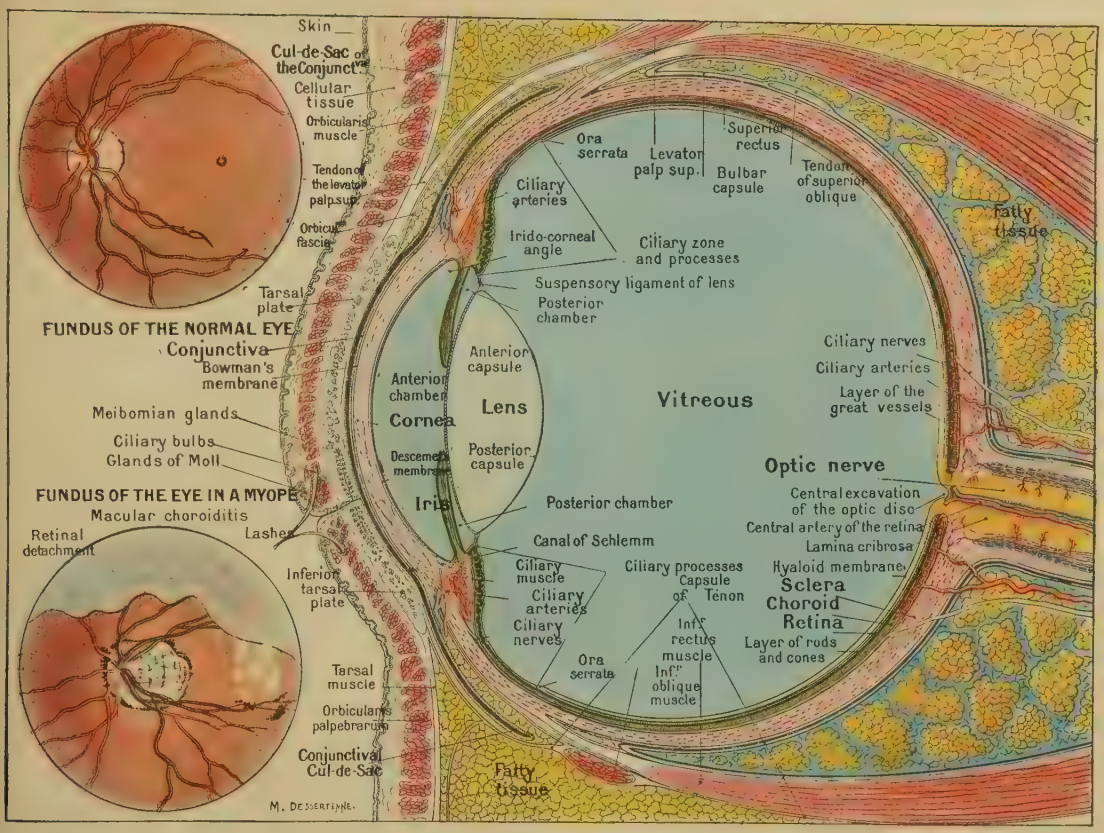
(d) Analgesics and Antipruritics (Gr. *ἀν* without + *ἄλγος* pain; *ἀντί* against + L. *pruri're*, to itch).—Menthol cone; menthol crystals; powdered camphor; camphor-chloral; spirits of camphor; liq. calcis; sodium bicarbonate; liq. potassæ; carbolic acid; alcohol; thymol; lead water; lead water and laudanum; cocaine; eucaine; orthoform; lin. belladonnæ; camphor ice; orthoform lozenges, gr. i; salicylic acid; resorcin; liq. carbonis detergens; acetic acid.

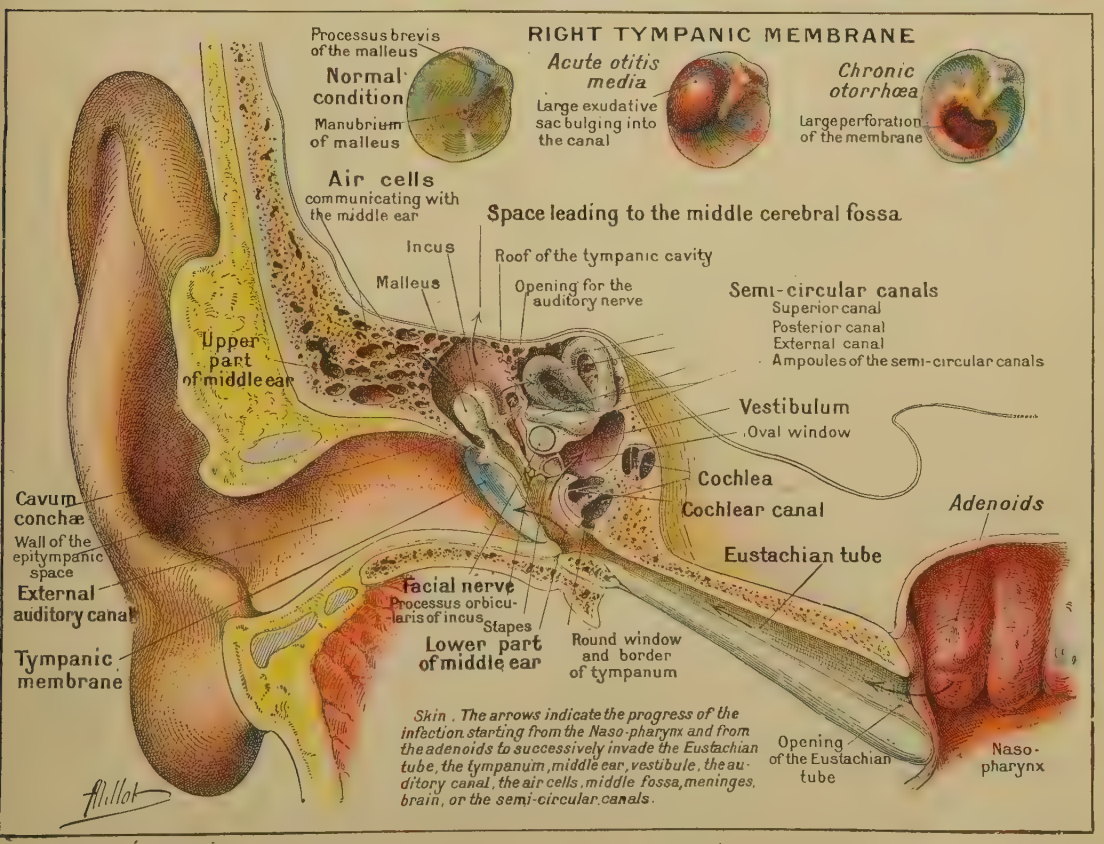
(e) Freezing Agents.—Ethyl chloride; solidified carbon dioxide; liquid air.

(f) Depilatories (L. *de*, away + *pil'us*, hair).—Barium sulphide.

(g) Perfumes.—Aq. rosæ; aq. cologniensis; ext. violet; ol. rosæ; ol. lavand.; ol. bergamot.

Miscellaneous.—Distilled water; walnut juice; pumice stone; Burgundy pitch; pulv. ipecac; sodium chloride.




RIGHT TYMPANIC MEMBRANE
Processus brevis of the malleus
Normal condition
Manubrium of malleus
Acute otitis media
Large exudative sac bulging into the canal
Chronic otorrhœa
Large perforation of the membrane
Air cells
communicating with the middle ear
Space leading to the middle cerebral fossa
Incus
Malleus
Roof of the tympanic cavity
Opening for the auditory nerve
Semi-circular canals
Superior canal
Posterior canal
External canal
Ampoules of the semi-circular canals
Upper part of middle ear
Vestibulum
Oval window
Cochlea
Cochlear canal
Adenoids
Cavum conchæ
Wall of the epitympanic space
External auditory canal
Tympanic membrane
Eustachian tube
Facial nerve
Processus orbicularis of incus
Stapes
Lower part of middle ear
Round window and border of tympanum
Opening of the Eustachian tube
Naso-pharynx
Skin. The arrows indicate the progress of the infection starting from the Naso-pharynx and from the adenoids to successively invade the Eustachian tube, the tympanum, middle ear, vestibule, the auditory canal, the air cells, middle fossa, meninges, brain, or the semi-circular canals.

LAROUSSE MÉDICAL

Section of eye, and fundus.-Ear and diseases of the ear.

PART 6

EYE DISEASES

Abducens Paralysis.—L. *ab*, from + *dućere*, to draw; Gr. παρά beside + λύειν to loosen. See Muscular Anomalies.

Ablatio Retinæ.—L. *ablat'io* ablation; L. *ret'ina*. See Detachment of the Retina.

Abscess of the Cornea.—L. *abscessus*, a going apart; L. *corńeus*, horny. See Keratitis Ulcerosa.

Eyeball.—See Panophthalmitis Purulenta.

Eyelid.—See Hordeolum.

Lachrymal Gland.—L. *laćrima*, tear; *glans*, a cord. See Dacryoadenitis.

Lachrymal Sac.—L. *sacćus*; Gr. σάκκος. See Dacryocystitis.

Orbital.—L. *orb'ita*, track. See Orbital Cellulitis.

Subperiosteal.—L. *sub*, under + Gr. περί around + ὀστέον bone. See Orbital Periostitis and Osteitis.

Accommodation Anomalies.—L. *accommodáre*, to fit to; Gr. ἀνωμαλία abnormal. The function of accommodation, or adjustment of the eye for various distances, resides in the lens and ciliary muscle. Faulty accommodation is manifested by a diminution of the power of near vision, whereby near work is rendered difficult or impossible (except perhaps in myopes or old people with sclerosed lens), with resulting symptoms of eye-strain (see Asthenopia).

Etiology.—Diminished elasticity and flattening of the lens due to advancing age (presbyopia Gr. πρέσβυς old + ὤψ eye, or old-sightedness); congenital inelasticity of the lens; luxation of the lens; removal of the lens; paresis or paralysis of the ciliary muscle (cycloplegia) due to paralysis of the third nerve (*q.v.*), diphtheria (the paralysis appears in two to four weeks following cure of the diphtheria), influenza, atropine and other mydriatics, intestinal intoxication, diabetes, syphilis, tabes, general paresis and other central nervous diseases, contusion of the eyeball, prodromal stage of glaucoma, severe constitutional diseases; "congenital inefficiency of the ciliary muscle," constituting what Theobald designates "subnormal accommodative power"; spasm of the ciliary muscle (revealed by finding the myopia higher in the subjective test with glasses than in the objective test with the ophthalmoscope or the shadow test), due to continual near work, refractive errors, reflex dental irritation, the action of miotics, hysteria.

Treatment.—This depends, of course, upon the cause (*q.v.*, in its alphabetical place).

In weakness or paralysis of the ciliary muscle, prescribe general rest and rest of the eyes, good food, fresh air day and night, care of the skin and bowels, and perhaps a tonic, such as the elixir ferri, quininæ, et strychninæ phosphati, or nux vomica, or Fowler's solution (see Drugs, Part 11). Local galvanization may be employed provided no acute symptoms are present. The cathode is placed over the closed lid, and the anode over the temple, and a very weak current (1 to 1½ milli-ampères) applied for five minutes daily. Instil pilocarpine solution, 1 per cent. or eserine solution, 0.25 per cent., one drop twice a day, for its stimulating effect upon the ciliary muscle.

The prognosis in paralytic cases is usually favorable, except in diseases of the central nervous system. Post-diphtheritic paralysis usually disappears spontaneously in from four to eight weeks.

In spasm of the ciliary muscle, attend to any possible etiological influence. Make a precise correction of any errors of refraction, as determined under atropinization.

For presbyopia, prescribe appropriate convex glasses.

Accommodation, Paralysis of the.—Gr. παρά beside + λύειν to loosen. See Accommodation Anomalies, above.

Spasm of the.—Gr. σπασμός. See Accommodation Anomalies, above.

Adenitis, Lachrymal.—L. *laćrima*, tear. See Dacryoadenitis.

Amaurosis.—Gr. ἀμαυρόειν, to darken; complete blindness. See Blindness.

Amaurotic Cat's Eye.—Gr. ἀμαυρόειν to darken. Luminosity of the pupil, resembling that of the cat, occurs when the retina is pushed forward, as in glioma retinæ, (*q.v.*), whereby emerging light rays diverge instead of being focussed to a point straight in front of the pupil. It is also present in albinos' eyes, due to lack of pigment in the choroid, and when the lens has been removed. A yellow reflection in the vitreous (pseudo-glioma) occurs in panophthalmitis purulenta (*q.v.*).

Amaurotic Family Idiocy.—See Part 1, General Medicine and Surgery.

Amblyopia and Amaurosis without Ophthalmoscopic Change.—Gr. *ἀμβλύς* dulled + *ὤψ* eye; *ἀμαυρόειν* to darken; *ὀφθαλμός* eye + *σκοπεῖν* to see. Amblyopia means diminished vision, and amaurosis, complete blindness.

Etiology.—Congenital deficiency of sight; non-use of the eye from earliest youth, due to opacities of the cornea or lens, a pupillary membrane, or squint (with suppression of vision in the squinting eye); sinus obstruction producing monocular blindness; malnutrition; uræmia; glycosuria; malaria; severe hemorrhage; refractive errors; accommodation anomalies; muscular anomalies; certain poisons (see Toxic Amblyopia); hysteria; prolonged exposure to bright light, as in snow-blindness; shock; severe injuries to the head; occipital injury; neurasthenia; hemiopia, due to a central lesion; migraine; excessive physical or mental exertion; straining of the eyes; dazzling light; great hunger.

In hysterical impairment of vision, "the field for red and green is often larger than that for white," "the limits for red are usually wider than those for blue," which is the reverse of normal, there is "concentric contraction of the visual field," which changes frequently, perhaps an annular scotoma, etc., and other hysterical phenomena (see Hysteria, in Part 1, on General Medicine and Surgery).

In neurasthenia, "the visual field gets smaller and smaller the longer the patient is tested with the perimeter" (reaction of exhaustion; see also Asthenopia).

Snow-blindness is accompanied by swollen lids, photophobia, conjunctivitis, corneal erosions, and possibly chorioretinitis.

The Prognosis is favorable in the above cases, excepting congenital amblyopia and glycosuria. In the latter instance, optic atrophy (*q.v.*) usually ensues. Optic neuritis (*q.v.*) and atrophy may also follow great loss of blood and the action of certain toxic agents. Hysterical amblyopia or amaurosis sometimes lasts for years.

Treatment.—In congenital amblyopia, any correctible defect present, such as an error of refraction, should be remedied, even though good vision rarely results.

Visional defects in childhood, such as cataract, pupillary membrane, or squint, should be corrected as early as possible, in order to prevent amblyopia from disuse.

In hysterical cases, inject strychnine (Part 11) near the eye, and employ massage, galvanization (see below), tinted glasses, and correct hygiene, *e.g.*, adequate mental and physical rest, daily exercise in the fresh air, agreeable occupation, fresh air day and night, a morning warm bath before breakfast in a warm room, followed by a cool spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, rest before and after eating, an abundant bland diet (excluding alcohol, tea, coffee, and tobacco) regulation of the bowels, and wholesome companionship with others. Iron or arsenic (see Part 11) may be prescribed as a tonic, if deemed advisable (see also Hysteria, in Part 1, on General Medicine and Surgery). In employing local galvanization, place the cathode over the closed lid and the anode over the temple and employ a current of from one to one and a half milliampères for five minutes daily.

In snow-blindness, keep the patient in a dark room, apply heat to the eyes, and instil atropine, gr. ii–iv to the ounce, one or two drops once or twice a day, or often enough to keep the pupil dilated.

Other causal conditions should be treated as described under their respective captions (see Part 1, on General Medicine and Surgery).

Amblyopia, Toxic.—See Toxic Amblyopia.

Ametropia.—Gr. *a* neg. + *μέτρον* measure + *ὤψ* eye: refractive imperfection of the eye, embracing myopia, hypermetropia, and astigmatism. See Refractive Anomalies.

Anæsthesia Retinæ.—Gr. *ἀν* not + *αἴσθησις* sensation.

Aneurysm.—Gr. *ἀνεύρυσμα* widening. See Exophthalmos.

Angioma Conjunctivæ.—Gr. *ἀγγεῖον* vessel + *-ωμα* tumor. See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

Anisocoria or Unequal Pupils.—Gr. *ἄνισος* unequal + *κορή* pupil. **Causes.**—Action of a mydriatic in one eye; marked difference in the refraction of the two eyes; unilateral blindness; aortic aneurysm; apical tuberculosis; dental disease; local traumatism; disease of the nervous system, *e.g.*, tabes, general paresis, multiple sclerosis.

The condition may occur in health.

Anisometropia.—Gr. *ἄνισος* unequal + *μέτρον* measure + *ὤψ* eye, a difference in the refractive power of the two eyes. See Refractive Anomalies.

Anomalies, Accommodation.—See Accommodation Anomalies.

Muscular.—See Muscular Anomalies.

Refractive.—See Refractive Anomalies.

Arcus Senilis.—L. *arcus*, arc or bow; *senilis*, senile. See Corneal Opacities.

Asthenopia; Eye-Strain.—Gr. *a* priv. + *σθένος* strength + *ὄψις* vision. Asthenopia or eye-strain signifies fatigue of the ocular

muscles, either the intrinsic or ciliary (accommodation asthenopia), or the extrinsic (muscular asthenopia), with the resulting manifold symptomatology, *e.g.*, "failure of near vision after use of the eyes (relaxed accommodation)"; "temporary blurring of distant vision (spasm of accommodation)"; "great discomfort when attempting to watch moving objects," also "inability to gaze attentively at stationary objects," also intermittent blurring of vision which may be attended by diplopia, and "eccentric poses of the head," even torticollis (muscular asthenopia or heterophoria, relieved at once by closing one eye); rapid fatigue after use of the eyes, contraction of the field of vision, "rapid disappearance from view of any object which is fixed," "diminution of central vision," "sudden attacks of obscuration of vision and processions of scotomas," "visual hallucinations," and general neurasthenic symptoms (nervous or neurasthenic or hysterical asthenopia); local pain; precordial and back pain; headache; migraine; vertigo; anorexia; indigestion, nausea and vomiting; car sickness; constipation; palpitation of the heart; drowsiness; insomnia; facial and other spasms, particularly tonic blepharospasm and twitching of the lids; photophobia; conjunctival hyperemia; blepharitis marginalis; eczema of the lids; styes; muscæ volitantes; neurasthenia; night-terrors; melancholia; hysteria; pseudochorea; chorea; epilepsy; etc. Continual straining of the eyes at near work tends to the production of myopia.

Etiology.—The immediate or exciting causes of asthenopia are over-use of the eyes, and impairment of the general health, due to debilitating diseases, dyspepsia, utero-ovarian disease, anæmia, insomnia, the excessive use of alcohol, tobacco, tea or coffee, etc. The remote or predisposing causes are refractive, accommodative, or muscular (especially heterophoria) anomalies, and neurasthenia or hysteria.

Nasal disease is said to cause asthenopic symptoms.

Treatment.—Attend to the cause. Correct any existing refractive, (*q.v.*), accommodative, (*q.v.*), or muscular (*q.v.*) anomaly, prohibit the use or abuse of alcohol, tobacco, tea, or coffee, and treat any existing dyspepsia, constipation, utero-ovarian disease, anæmia, insomnia, etc., as described in Part 1 on General Medicine and Surgery, and Part 2, on Gynæcology.

Treat conjunctival hyperæmia (*q.v.*), blepharitis (*q.v.*), and styes (*q.v.*), if present. For insufficient nervous tone, prescribe ascending doses of strychnine, or nux vomica (see Drugs, Part 11).

"Large doses of tincture of hyoscyamus are of distinct advantage in cases of spasmodic heterophoria." (De Schweinits.)

For headache, one may apply very hot or cold fomentations by means of a folded towel held at the ends in both hands and pressed over the forehead and lids; or the forehead and temples may be rubbed with one of the following preparations:

℞ Spiritus lavandulæ,
Alcoholis, aa ..... ℥iii
Spiritus camphoræ ..... ℥i
M. Sig—Apply to the forehead and temples every two or three hours. (Wood and Woodruff.)

℞ Chloroformi ..... ℥i
Camphoræ ..... ℥ii
Tincturæ aconiti ..... ℥ii
Olei menthæ piperitæ ..... gtt. xx
Alcoholis, ... ℥ii
M. Sig.—Shake well and apply every two or three hours. (Wood and Woodruff.)

A weak galvanic current, 3 to 5 milliampères, with the positive pole to the nape of the neck and the negative pole (preferably a double eye electrode) to the closed lids, applied for two to ten minutes at a time, may afford temporary relief. (Wood and Woodruff.)

℞ Chloretone ..... gm. 0.10
Sodii biboratis ..... gm. 0.50
Aquæ destillatæ ..... c.c. 30.00
M. Sig.—Instil into the eyes a few drops every hour or two. (Wood and Woodruff.)

℞ Sodii biboratis ..... gr. xv
Acidi borici ..... gr. xv
Aquæ camphoræ ..... ℥ii
Adrenalini chloridi (1 : 1000), q.s., ad ..... ℥i
M. Sig.—Instil a few drops every hour or two.

Astigmatism.—Gr. *a* priv. + *στίγμα* point: "a defect in which light-rays in different meridians are not brought to the same focus by the eye." (Dorland.) See Refractive Anomalies.

Atresia of the Canaliculi.—Gr. *a* neg. + *τρήσις* a boring; L. *canalic'ulus*, little canal. See Epiphora.

Lachrymal Puncta.—L. *lac'rima* tear; *punc'tum*, point. See Epiphora.

Atrophy of the Optic Nerve.—See Optic Atrophy.

Black Eye; Ecchymosis.—Gr. *ἐκ* out + *χύμα* a flow. If seen at once, apply cold cloths, or cloths wet with a solution of liquor plumbi subacetatis, ℥i, alcohol, ℥i, and water, Oi; or apply leeches; or make several small transverse incisions or punctures and press the extravasated blood out.

Later, employ hot compresses, pressure, and massage with a bland oil. The discol-

oration may be concealed with flesh-colored (water color) paint.

Blennorrhœa.—Gr. *βλέννος* mucus + *ῥοία* flow.

Blepharitis Marginalis.—Gr. *βλέφαρον* eyelid + *-ιτις* inflammation; L. *marg'o*, margin. Squamous, crusted, or ulcerous inflammation of the lid margin.

Etiology.—Malnutrition, *e.g.*, anæmia and tuberculosis (the blepharitis is often accompanied by eczema, phlyctenular conjunctivitis, or otorrhœa); chronic conjunctivitis; ectropion; lagophthalmus; epiphora; lachrymal disease (the blepharitis is likely to be unilateral in these unilateral affections); chronic rhinitis; eye-strain; exposure to bad air, wind, dust, smoke, heat, etc.; late hours and debauchery; eczema; eczema seborrhœicum, seborrhœa, acne.

Prognosis.—A cure may require several months, and recurrence is usual.

Treatment.—Aim to remove the cause (*q.v.* under its appropriate heading). Enjoin adequate rest and exercise, fresh air day and night, a daily morning warm bath in a warm room, before breakfast, followed by a cool spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, an abundance of wholesome food, rest before and after eating, and regulation of the bowels. A tonic may be prescribed, *e.g.*, iron, strychnine, codliver oil, arsenic (see Drugs, Part 11).

Remove loose eyelashes, open abscesses and epilate the involved cilia by means of cilium forceps, cut off warts and cauterize their base with the silver stick, and massage callosities (tylosis) with the aid of white precipitate ointment, 1 to 2 per cent.

Instruct the patient to sponge the lid-margins once or twice daily, in order to remove all crusts and scales, with warm water, or a solution of sodium carbonate, gr. v to the ounce, or bicarbonate or biborate of sodium, gr. viii to the ounce, or soapsuds (with the lids gently closed), and then apply one of the following ointments:

℞ Hydrargyri oxidi flavi..... gr. v
Adipis lanæ hydrosi,
Petrolati mollis, aa..... ℥ii

℞ Hydrargyri oxidi flavi..... gr. viii
Unguenti aquæ rosæ, vel cerati
flavi, 1.0 et petrolati mollis, 4.0 ℥ss
(Theobald.)

℞ Acidi salicylici..... gr. v
Adipis lanæ hydrosi,
Petrolati mollis, aa..... ℥ii

℞ Acidi borici..... gr. v–xxiv
Adipis lanæ hydrosi,
Petrolati mollis, aa..... ℥ii

℞ Hydrargyri ammoniati..... gr. v
Adipis lanæ hydrosi,
Petrolati mollis, aa..... ℥ii

Salicylic ointment is especially indicated for scaly conditions, the yellow oxide of mercury for ulceration, and the boric and white precipitate ointments for the promotion of healing.

A warm boric acid lotion (2 to 4 per cent.) may be applied several times during the day.

In obstinate cases, the physician may touch the lid margin lightly with a pointed crayon of silver nitrate, or silver nitrate solution, gr. v ad ℥i, or protargol, 5 to 20 per cent., or argyrol, 25 per cent.

Blepharochalasis.—Gr. *βλέφαρον* eyelid + *χάλασις* relaxation. A very rare condition of relaxation or looseness of the skin of the eyelid, due to atrophy of the connective tissue (dermatolysis) occurring in early childhood.

Blepharospasm.—Gr. *βλέφαρον* eyelid + *σπασμός* spasm. Tonic or clonic spasm of some or all the fibres of the orbicularis muscle.

Etiology.—Ocular irritation due to a foreign body, inflammation, blepharitis, trichiasis, and eye-strain; reflex irritation from the teeth, nose, throat, ear, accessory sinuses, phimosis, worms, etc.; central irritation, as in hysteria, habit spasm or tic convulsif, trigeminal neuralgia, mental strain, worry, or shock, debility, nerve tumor, brain lesion, etc.

Treatment.—Aim to correct the cause. Remove all possible sources of reflex irritation. Enjoin the observance of correct hygiene, *e.g.*, adequate rest and recreation, regular hours of eating and sleeping, rest before and after meals, frequent bathing, fresh air day and night, regulation of the bowels, and a bland, nutritious diet, together with such tonics as iron, arsenic, strychnine, and quinine (see Drugs, Part 11.) Interdict tea and coffee. Encourage the patient to inhibit the movements.

Pressure upon certain points sometimes affords relief. Galvanism or the hypodermic injection of morphine at these points may be effectual; also the application of cocaine, 2 to 4 per cent., to the conjunctiva; or galvanism to the closed lids. In the latter instance, employ a weak current of from three to five milliampères, with the positive pole to the nape of the neck and the negative pole to the closed lids, for about ten minutes at a sitting. The antispasmodics, conium and gelsemium (see Part 11), pushed to the physiological limit, may perhaps be tried in certain cases.

Blindness.—Partial or complete loss of vision.

Consult: Accommodation anomalies; amaurotic cat's-eye; amaurotic family idiocy;

amblyopia and amaurosis without ophthalmoscopic change; cataract; choroiditis; color-blindness; corneal opacities; corneal staphyloma; detachment of the retina; dislocation of the lens; glaucoma; glioma of the retina; hemeralopia; hemianopia; hemorrhage into the vitreous; iritis; keratoconus; keratomalacia; muscular anomalies; nyctalopia; opacities in the vitreous; optic atrophy; optic neuritis; panophthalmitis; refraction anomalies; retinitis; scleral staphyloma; scleritis; scotomata; sympathetic ophthalmia; toxic amblyopia.

Blindness, Color.—See Color-Blindness.

Day.—See Hemeralopia.

Night.—See Nyctalopia.

Snow.—See Amblyopia and Amaurosis.

Bodies, Foreign, in the Eye.—See Foreign Bodies in the Eye.

Bruise.—See Black Eye,.

Bullous Keratitis.—L. *bul'la*, large blister. See Keratitis Vesiculosa.

Buphthalmus.—Gr. *βοῦς* ox + *ὀφθαλμός* eye. Buphthalmia. See under Glaucoma.

Burns of the Eye.—See Injuries of the Eye.

Calcareous Concretions, Meibomian.—L. *calcárea*, lime; *concrétio*, from *cum*, together, + *creścere*, to grow. See Lithiasis Conjunctivæ.

Calculus, Lachrymal.—L. *calculus*, pebble; *laćrima*, tear. See Epiphora.

Canaliculus, Obstruction of the —L. little canal; *obstrućtio*. See Epiphora.

Canthotomy.—L.; Gr. *κανθός* + Gr. *τέμνειν* to cut. See Conjunctivitis Gonorrhœica; and Conjunctivitis Trachomatosa.

Carcinoma Conjunctivæ.—L. *cańcer*; Gr. *καρκίνος* crab + *-ωμα* tumor. See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

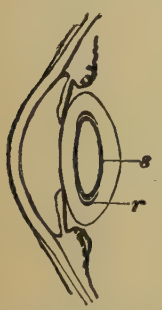


Fig. 98.—Lamellar Cataract in Cross Section. Schematic. Magnified 2×1. The layers *s*, placed between nucleus and cortex, are opaque, but the adjacent layer is so only in the equatorial region, *r*, so that riders are formed.

Cataract.—L. *cataract'a*, from Gr. *καταρηγνύναι* to rush down. Opacity of the lens or its capsule or both.

A cataract is either general (total) or partial. A general or total cataract may be white (juvenile, soft, occurring before the age of forty), or it may be yellowish or amber-colored, gray or black (senile, hard). "Under the age of thirty-five all cataracts are soft." (De Schweinitz.)

Partial cataracts are classified by Fuchs as follows:

(a) Zonular, lamellar, or perinuclear cataract, in which the layers of the lens situated between the nucleus and cortex are opaque while the latter are both transparent (Fig. 98). It occurs congenitally or in early childhood, rickets and convulsions bearing a causal relation.

(b) Anterior polar cataract. It occurs congenitally, or in small children as the result of a central perforating gonorrhœal ulcer of the cornea, with adhesion to the lens.

(c) Posterior polar cataract, extracapsular and congenital, due to remains of the hyaloid artery.

Fig. 99.—Posterior Polar Cataract. Magnified 2 × 1.

(d) Other congenital circumscribed forms.

(e) Anterior and posterior cortical cataracts, usually following disease of the deep structures of the eye, but also caused by injury of the lens and certain skin affections. The posterior cortical cataract, with its stellate or rosette-shaped opacity, should be distinguished from the posterior polar variety with its round dot (see Figs. 99 and 100). After remaining stationary for many years, the cortical opacities eventually become total.

Fig. 100.—Posterior Cortical Cataract. Magnified 2 × 1.

The occurrence of cataract is marked by a gradual impairment of vision, usually binocular; monocular diplopia or polyopia may occur. The decline of presbyopia, or second-sight, is an early sign of approaching cataract. Light perception is retained in uncomplicated cataract; if lost, retinal or optic degeneration is present, which renders operation useless. The pupil reacts to light in uncomplicated cataract; it does not in optic atrophy.

In examining the eye for cataract, first dilate the pupil with an evanescent mydriatic, *i.e.*, homatropine hydrobromate, 1 per cent.; or euphthalmin hydrochlorate, 5 per cent. (Theobald), and employ both oblique illumination (*q.v.*) and the ophthalmoscope. Hold the latter twelve inches from the eye: the cataractous parts appear dark against a red background.

Etiology.—Senility (the commonest cause; according to T. Barth, opacities occur in 96 per cent. of all persons above sixty, but they usually remain slight and of no pathological importance); lenticular traumatism; diabetes; nephritis; gout; malaria; cholera; influenza; meningitis; congenital syphilis; tuberculosis; rickets; infantile convulsions; tetany; arteriosclerosis; heat; electricity; lightning-stroke; bronchocele; hookworm disease; extensive skin affections; pellagra; naphthalin or naphthol; ergot; raphania; hereditary predisposition; congenital anoma-

lies; disease of the deep eye structures (uveal tract diseases, "unchecked inflammatory glaucoma," "lifelong accommodative strain," due to uncorrected errors of refraction producing a choroido-retinitis *q.v.*, myopia of high degree, retinitis pigmentosa, corneal suppuration, detachment of the retina).

Treatment.—Soft cataracts may be needled; hard cataracts must be extracted.

A zonular, lamellar, or perinuclear cataract should be operated upon only when the vision is quite bad. If the cataract is not progressing, and the transparent periphery of the lens is broad enough to furnish sufficient vision as determined with atropine, do an iridectomy; if the transparent periphery is not broad enough, extract the lens. If the cataract is progressing, do a discission in young people, an extraction in older ones with a hard nucleus. (Fuchs.)

Anterior polar cataract, in rare cases, calls for an iridectomy.

Posterior polar cataract and other congenital circumscribed forms require no treatment. A general congenital cataract, however, should be removed during the early weeks of life, to prevent lack of development of the retina.

A general, hard cataract is not ready for operation until it is mature, that is, until no transparent portions remain. To determine whether the cataract is "ripe" for operation, the pupillary space is illuminated obliquely. "If the opacity is complete, the opaque lens, covered by its capsule, is level with the margin of the pupil, and there is no shadow (of the iris in the lens); if not, the major portion of the opacity is at a level posterior to the plane of the pupil, or in other words, a clear or partly clear space is present between the iris and the opaque portion, and a dark semicircle appears upon the opacity at the side from which the light comes. This is the shadow of the iris. Shining sectors or the transmission of a red glare indicate immaturity, even if the shadow is absent. In hypermature cataract the shadow is visible (not visible says Fuchs), but the surface of the lens is flat" (De Schweinitz). In hypermature cataract, says Fuchs, "the surface of the lens appears quite homogeneous (in the case of liquefaction), or shows irregular dots and spots in place of the radial markings of the lens-star." It may take from one to three years or longer for a senile cataract to become mature. In traumatic cataract, wait until the cataract is complete before operating.

Before every cataract operation or iridectomy, the tear passages should be carefully examined for evidences of infection, and their patency tested by injecting liquid through them (see Dacryocystitis). The presence of local or near-by infection contraindicates operation.

When a cataract is seen in its incipiency, one should try the daily instillation of dionin, 4 per cent. (it causes an œdematous reaction at first), or subconjunctival injections of mercuric cyanate, 1 :4000, 10 to 20 minims, containing 1 per cent. of acoin for the relief of pain. The injections cause marked pain and œdema.

Catarrhal Conjunctivitis.—L. *catar'rhus*, from Gr. καταῤῥεῖν to flow down. See Conjunctivitis Catarrhalis.

Catarrh, Dry.—See Conjunctival Hyperæmia.

Spring.—See Conjunctivitis Vernalis.

Cat's-Eye, Amaurotic.—See Amaurotic Cat's-Eye.

Cellulitis, Orbital.—L. *cel'lula*, dim. of *cel'la*, cell + Gr. -ιτις inflammation. See Orbital Cellulitis.

Centres, Optic.—See Optic Chiasma, Tract, and Centres.

Cephalocele, Orbital.—Gr. κεφαλή head + κήλη tumor. See Orbital Tumors.

Chalazion.—Gr. χάλαζα hailstone. A retention cyst of a tarsal or Meibomian gland.

Blepharitis marginalis and eye-strain are cited as predisposing causes.

Treatment.—Anæsthetize the conjunctiva by several applications of cocaine, 4 per cent., in adrenalin, 1 : 1000; and excise the cyst through the conjunctiva. A Desmarre or a chalazion clamp may be used to hold the lid and control the bleeding while operating.

Instead of excising the cyst, one may incise it by means of a crucial incision through the conjunctiva, evacuate the contents, curette the wall thoroughly to prevent recurrence, and cauterize with silver nitrate fused on a silver probe. A transitory inflammatory reaction follows cauterization. Excision of the cyst is, however, to be preferred. It is better surgery, and obviates recurrence.

Chiasma, Optic.—See Optic Chiasma.

Choked Disc.—L. *discus*, a circular, flat plate. See Optic Neuritis.

Chorioretinitis.—See Choroiditis, below.

Choroiditis.—Gr. χόριον skin + εἶδος form + -ιτις inflammation. Choroiditis is characterized, anatomically, by the presence of isolated, yellowish, indistinctly outlined spots of exudate beneath the retinal vessels, and an altered, veil-like appearance of the retina. Vision is impaired as a result of cloudiness and opacities of the vitreous (the latter may cause floating specks before the eyes), hyperæmia of the retina, and the isolated retinal inflammatory foci (producing

scotomata) situated over the corresponding choroidal spots (choroido-retinitis). Distortion of images, alterations in the apparent size of images, and "sparks and balls of fire" before the eyes may occur.

Says Theobald: "Disease of the choroid and retina is to be suspected when the pupil is enlarged and responds imperfectly to light,

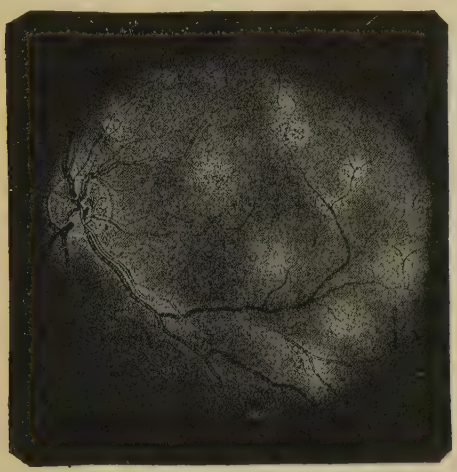


Fig. 101.—Recent Chorioiditis. (After Oeller.)

and when, glaucoma having been excluded, distant as well as near vision is impaired, and is growing progressively worse."

After healing has occurred, the yellowish, hazily outlined choroidal spots appear as white, sharply-outlined cicatricial spots, often surrounded with black pigment or covered with black spots. (Figs. 101 and 102).

Fig. 102.—Senile Guttate Chorioiditis (Tay and Hutchinson). (After Weeks.)

Etiology.—Syphilis (congenital or acquired); tuberculosis; pneumococcus, streptococcus, and other infections, tonsillitis, influenza, typhoid fever, pyorrhœa alveolaris, pelvic disease, disease of the nasopharynx and accessory sinuses, gonorrhœa, rheumatism; intestinal toxæmia; constitutional or nutritional disorders, such as anæmia, gout, diabetes, tuberculosis, nephritis, liver disorders, menstrual disorders and the climacterium; traumatism; eye-strain; progressive myopia due to posterior staphyloma.

Prognosis.—This is unfavorable, as a rule, except perhaps in syphilis. The affection is chronic, with a tendency to recurrence. Atrophy of the retina and optic nerve and also cataract ensue in obstinate cases. Glaucoma or cataract may follow the choroido-retinitis due to eye-strain.

Treatment.—Attend to any possible etiological influence, and enjoin the observance of correct hygiene, *e.g.*, adequate rest and exercise, fresh air day and night, frequent bathing, regulation of the bowels, a bland, simple, but nutritious diet, rest before and after eating, and regular hours of eating and sleeping. "Codliver oil (see Part 11) and iron are specially indicated in children," says Randolph. The eyes should be protected with dark glasses.

In order to hasten resorption of the inflammatory exudate, administer, to begin with, an active calomel purge, gr. ii–viii, at bedtime, followed by salts in the morning, one hour before breakfast (see Part 11); then institute a course of potassium iodide and mercury, even in non-syphilitic cases, together with energetic diaphoresis, practiced every day or every other day by means of sodium salicylate or aspirin, gr. xx dissolved in hot linden flower or elder tea or lemonade, with the patient well wrapped in blankets; or by means of pilocarpine, gr. $\frac{1}{8}$ to $\frac{1}{4}$, every other night; or a hot bath followed by woolen blankets; or hot bricks covered with alcohol; and give also subconjunctival injections of normal salt solution (0.6 to 0.9 per cent.), or cyanide of mercury, 1 : 5000, or bichloride of mercury, 1 : 4000 to 2000.

Should iritis supervene, as indicated by the occurrence of pericorneal injection, pain, photophobia, and lachrymation, instil atropine, as described under Iritis.

For the relief of pain and irritability, bandage to the lids, compresses wet with hot water or with ext. opii, gr. x–xv, in aquam, ℥iv (Theobald), or ext. belladonnæ, gr. xv, in aquam, ℥iv. The application of six or eight leeches or the Heurteloup artificial leech (1 to 2 cylinderfuls) to the temple or mastoid process is also of service in reducing the inflammatory symptoms.

Choroidoretinitis.—See Choroiditis.

Ciliary Body, Inflammation of the.—L. *cil'ium*, hair-like body; *inflamma're*, to set on fire. See Cyclitis.

Ciliary Muscle, Paralysis of the.—L. *musculus*; Gr. παρά beside + λύειν to loosen. See Accommodation Anomalies.

Spasm of the.—Gr. σπασμός. See Accommodation Anomalies.

Coloboma.—L.; Gr. κολόβωμα mutilation or defect. A fissure or defect, usually congenital, of any part of the eye.

Color-Blindness.—Color blindness is either (1) congenital and incurable, occurring in 3 to 4 per cent. of males, or (2) acquired, due to affections of the light-perceiving apparatus (retina, optic nerve and visual centres), *e.g.*, tobacco and alcohol amblyopia, hysteria, optic atrophy, etc.

Red-green blindness is the commonest type. Blue-yellow blindness and total color blindness are rare.

In testing for color blindness, set a Holmgren colored worsted before the patient, and ask him to place with it all the worsteds that look like it or that approximate it in shade.

Concomitant or Ordinary Squint.—L. *cum*, together + *com'es*, companion. See Muscular Anomalies.

Concretions, Mebiomian.—L. *cum*, together + *crescere*, to grow; H. Meibom (1638–1700). See Lithiasis Conjunctivæ.

Conical Cornea.—Gr. κῶνος; L. *co'nus*, cone; L. *cor'neus* horny. See Keratoconus.

Conjunctival Burns.—L. See Injuries of the Eye.

Catarrh.—See Conjunctivitis Catarrhalis.

Cysts.—Gr. κύστις bladder. See Conjunctival Tumors.

Diphtheria.—See Conjunctivitis Diphtherica.

Dryness.—See Xerosis; Xerophthalmos.

Conjunctival Hyperæmia; Dry Catarrh.—Gr. ὑπέρ over + αἷμα blood; L. *catar'rhus*, from Gr. καταῤῥεῖν to flow down. Simple hyperæmia is distinguished by redness without discharge other than increased lachrymation.

Etiology.—1. Acute or Transient.—Foreign body; exposure to wind, cold, heat, light, irritating gases, smoke, etc.; prolonged use of the eyes; crying; acute rhinitis (coryza, hay fever); facial neuralgia; acute exanthematous fevers, onset of inflammation; potassium iodide; arsenic.

2. Chronic.—Eye-strain; chronic rhinitis; inflammation of the lachrymal apparatus; trichiasis; late hours; alcoholism; gout; indigestion; blepharitis marginalis.

Treatment.—Remove the cause.

℞ Zinci sulphatis ..... gr. ¼
Acidi borici ..... gr. x
Aquæ destillatæ ..... ℥i

M. Sig.—Instil several drops into the eye, t.i.d. (After Theobald.)

Conjunctival Inflammation.—L. *inflamma're*, to set on fire. See Conjunctivitis.

Injuries.—See Injuries of the Eye.

Lithiasis.—See Lithiasis Conjunctivæ.

Traumatism.—Gr. τραῦμα wound. See Injuries of the Eye.

Conjunctival Tuberculosis.—L. *tuber'culum*, nodule. Tuberculosis of the conjunctiva is characterized by the presence of localized, slowly advancing ulceration and thickening, grayish-red granulations and nodules, swelling of the preauricular lymph-gland, and the demonstration of giant cells and tubercle bacilli in removed bits of tissue. Sporotrichosis is excluded by the absence of the fungus on microscopic examination.

Treatment.—If not secondary to nasal tuberculosis, a cure may be hoped for by the complete excision of the ulcer, or thorough curettage followed by thorough cauterization. If the disease is too extensive, however, to permit of these measures, one may try tuberculin injections or phototherapy, and treat the lesions with iodoform powder or ointment, 10 to 20 per cent. (Fuchs). Axenfeld claims success with lactic acid, 50 per cent. solution, followed by irrigation with saline solution, ℥i ad Oi. Correct hygiene and an abundance of good food are, of course, of the greatest importance (consult Tuberculosis, Pulmonary, in Part 1, on General Medicine and Surgery, for important details in regard to the constitutional treatment).

Conjunctival Tumors.—L. *tu'mor*, from *tu'mere*, to swell. 1. Epithelioma.—(Gr. ἐπί on + θηλή nipple; -ωμα tumor).—A superficial membrane-like, vascular, malignant growth, with a tendency to ulceration. If small, thorough excision may be practiced, followed by cauterization with the actual cautery; if large, the eye may have to be removed. Treacher Collins removed a growth 10 mm. in diameter by means of radium bromide, 10 mg. of which, on a circular disc, 1 cm. in diameter, unscreened, was held continually over the growth for fifty minutes by a relay of assistants. "The growth disappeared completely in a fortnight, and after five months nothing could be seen except a smooth grayish scar"

2. Sarcoma Gr. σάρξ, σαρκός flesh).—A prominent, mushroom-like, malignant growth. Treat the same as epithelioma.

3. Papilloma (L. *papil'la*, nipple).—A nodulated, raspberry-like growth. Make a thorough excision, in order to obviate recurrence, followed by the actual cautery.

4. Dermoid (Gr. δέρμα skin + εἶδος form).—A congenital cyst containing skin, hair, perhaps teeth, etc., situated partly in the cornea and partly in the conjunctiva. It should be carefully excised, and the denuded area covered with conjunctiva.

5. Cysts (Gr. κύστις bladder).—Varieties: Dermoid, hydatid, lymphangiectatic, traumatic, congenital. Excise the cyst, and cover the denuded area with conjunctiva.

6. Lipoma Subconjunctivale (Gr. λίπος fat; L. *sub*, under).—A benign, yellowish, fatty growth, situated beneath the conjunctiva, upon the upper and outer surface of the eyeball. If large, it may be removed in whole or in part.

7. Polypi (L.; Gr. πολύς many + πούς foot).—Small, pedunculated fibromata. Excise the growth, and cauterize the base with silver nitrate.

8. Hæmangioma (Gr. αἷμα blood + ἀγγεῖον vessel.)—A rare, usually congenital anastomosing network of dilated and tortuous capillaries. Remove the growth with the actual cautery, if small; if large, employ electrolysis. With the positive pole of a galvanic battery, in the form of a plate covered with a wet sponge, upon the temple, plunge the negative needle, which is coated with shellac or gutta-percha up to within one-eighth inch of the point, into the tumor, and turn on a current of from one to three or more milliampères, according to the size of the growth. Allow the current to act until a blanched line is produced along the needle's course. Make parallel slanting punctures, about one-eighth inch apart, down to the base of the growth. Always increase and break off the current slowly. Several sittings, at intervals, of one to three weeks are always required.

9. Pigmented Moles (L. *mo'les*, mass), fibromata (L. *fi'bra*, fibre), myxomata (Gr. μύξ'ος mucus), cylindromata (Gr. κύλινδρος cylinder), lymphangiomata (L. *lym'pha*, lymph + Gr. ἀγγεῖον vessel) are very rare.

Conjunctival Wounds.—See Injuries of the Eye.

Xerosis.—See Xerosis.

Conjunctivitis Catarrhalis seu Simplex.—L. *catar'rhus*, from Gr. καταῤῥεῖν to flow down; L. *simp'lex*, simple. Simple catarrhal conjunctivitis is characterized by conjunctival injection, a muco-purulent discharge, and gumming of the eyelashes during sleep. The injected vessels are superficial, brick-red in color, coarse, tortuous, and movable, as distinguished from the deep, pinkish, fine pericorneal injection of keratitis and uveitis. The conjunctival surface is smooth in the acute form. The disease is usually binocular.

Etiology.—1. Acute Inflammation.—Irritation caused by smoke, dust, wind, cold, heat, gases, foreign bodies, etc.; acute rhinitis (cory'za, hay fever); bronchitis, pulmonary disorders; trichiniasis; facial erysipelas; impetigo contagiosa; eczema; acute infectious diseases (measles, scarlet fever, smallpox, typhus fever, typhoid fever, rheumatic fever, influenza, yellow fever); blepharitis. Bacterial agents are the Koch-Weeks bacillus, diplobacillus of Morax-Axenfeld, diplobacillus liquifaciens of Petit; pneumococcus, influenza bacillus, streptococci, staphylococci, micrococcus catarrhalis, colon bacillus, hæmoglobinophilic bacilli, von Prowazeck inclusion bodies, etc. One should remember that the normally present xerosis bacillus resembles the bacillus diphtheriæ.

2. Chronic Inflammation.—Prolonged or frequently repeated acute inflammation; late hours; alcoholism; eye-strain; blepharitis marginalis; disease of the lachrymal apparatus (epiphora); ectropion; chronic rhinitis; infection of the Meibomian glands; lagophthalmus; prominent eyeballs; prolonged bandaging; bad hygiene.

Says Webster, "The most common bacterial cause of chronic conjunctivitis is the bacillus of Morax-Axenfeld."

Treatment.—Prescribe a laxative, such as castor-oil, calomel, compound laxative pill, compound licorice powder, or cascara (see Drugs, Part 11), and one of the following collyria:

℞ Zinci sulphatis ..... gr. ss
Acidi borici ..... gr. x
Aquæ bullientis ..... ℥i
M. Sig.—Drop into the eyes t.i.d.

℞ Sodii boratis ..... gr. x
Aquæ camphoræ ..... ℥ii
Aquæ destillatæ, q.s., ad ..... ℥i
M. Sig.—Drop into the eyes t.i.d.

℞ Zinci sulphatis ..... gr. i
Sodii biboratis ..... gr. iv
Aquæ camphoræ,
Aquæ bullientis, aa ..... ℥iv
Misce et filtra.
Sig.—Drop into the eyes t.i.d.

Frequent irrigation with warm boric acid solution, two to four teaspoonfuls to the pint is very useful. At bedtime the lid-margins may be anointed with boric ointment.

If prompt improvement does not follow

the above treatment, substitute for the zinc solution, argyrol, 5 to 10 to 25 per cent., protargol, 2 to 5 to 20 per cent., or silver nitrate, 0.5 to 1 to 2 per cent. The latter is applied with a camel's-hair brush, avoiding the cornea, every one or two days, followed by normal salt solution (℥i ad Oi); but it is probably better replaced by the other silver preparations.

In severe cases, one may employ bichloride solution, 1 : 10,000 to 8000.

For diplobacillary conjunctivitis, L. K. Wolff recommends the insufflation of finely pulverized fluorescin-zinc (made from potassium fluorate and zinc sulphate, soluble in water only in 1 to 1000 solution, and containing 15.8 per cent. of zinc), followed by light massage. One or two applications are curative in from twenty-four to forty-eight hours.

For chronic conjunctivitis, employ the above zinc collyria. "Boric acid in lanolin (2 per cent.) is useful if the conjunctival surface is too dry" (De Schweinitz). The cause, of course, should be sought and corrected. A tonic may be indicated, and correct hygiene enjoined. See also Conjunctival Hyperæmia.

Conjunctivitis Catarrhalis Epidemica.—Gr. ἐπί on + δῆμος people. See Conjunctivitis Catarrhalis.

Conjunctivitis Crouposa seu Membranosa seu Diphtheritica.—L. *membrána*, membrane; Gr. διφθερα membrane. This type of conjunctivitis is characterized by the formation of a membrane of exudate with (diphtheritic) or without (croupous) underlying necrosis. It may occur in any variety of conjunctivitis as well as in diphtheria, and also as a result of burns, strong or too frequently repeated silver nitrate applications, the too frequent application of jequirity infusion, poor health, etc. There is a serious streptococcus form which occurs usually in smallpox, measles, or scarlet fever.

The prognosis in diphtherial cases is serious. The condition in any case is rebellious to treatment.

Treatment.—Irrigate the eye very gently, three or four times daily (taking great care not to abrade the corneal epithelium), with warm saturated boric acid solution (gr. xviii to the ounce), or bichloride of mercury, 1 : 10,000 to 8000, or cyanide of mercury, 1 : 5000, using pledgets of absorbent cotton, or a fountain syringe with a bulbous-tipped nozzle, or an irrigating bottle, or a hollow lid-retractor. Warm compresses may be bandaged on the lids, soaked in hot water, or in Theobald's opium lotion:

℞	Extracti opii	gr. x
	Acidi borici	gr. xl
	Aquæ	℥iv

"Iodoform powder or salve (see Part 11) may be freely applied within the conjunctival sac." (De Schweinitz.)

If ciliary injection is present, instil atropine (see Keratitis Ulcerosa). Corneal necrosis is very liable to occur in diphtherial infection. If the lids become very tense, a free canthotomy may be necessary in order to relieve pressure on the cornea. An incision is made at the external angle of the eye, "from without down to the bone, as far as the margin of the orbit, but leaving the conjunctiva uninjured." Canthotomy may be practiced only in adults.

After the membrane has been thrown off, apply protargol, 2 to 4 to 10 per cent., or silver nitrate, 1 per cent., once a day, or on alternate days. The latter is applied with a camel's-hair brush, avoiding the cornea, and is followed with normal saline solution (℥i ad Oi). If necrosis and sloughing of the conjunctiva has occurred, endeavor to prevent the formation of adhesions between the eyeball and the lids by inserting a pledget of cotton soaked in castor-oil between the two, and by frequently drawing the lids away from the eyeball.

A tonic, such as the elixir ferri, quininæ, et strychninæ phosphati (Part 11) is usually indicated.

In diphtherial cases, the sound eye should be protected with a Buller's shield or watch crystal fastened with adhesive plaster, open on the temporal side for ventilation, but sealed on the nasal side with collodion. The patient should be isolated, and the dressings burned. Diphtherial antitoxin should, of course, be administered (see Diphtheria, in Part 1, on General Medicine and Surgery).

Conjunctivitis Diphtherica.—See Conjunctivitis Crouposa.

Eczematosa.—Gr. ἐκζεῖν to boil out. See Conjunctivitis Phlyctenulosa.

Follicularis.—L. *follicúlus*, little bag. An acute or chronic, contagious affection of the conjunctiva, occurring usually in poor school children as a result of uncleanliness and bad hygiene, and characterized by the presence in the superior and inferior retrotarsal folds, usually in parallel rows, of pinhead sized, oval, translucent nodules or follicles consisting of hypertrophied lymphoid tissue. The prognosis is good. The follicles tend to disappear in time.

The disease may be caused by non-sterile atropine. Eye-strain predisposes.

Treatment.—Prescribe a tonic, such as the elixir ferri, quininæ, et strychninæ phosphati (Part 11), and enjoin the observance of correct hygiene, *e.g.*, adequate rest and exercise, fresh air day and night, cleanliness, wholesome food, regular hours of eating and sleeping, rest before and after meals, and regulation of the bowels.

The local treatment is antiseptic:

℞ Zinci sulphatis..... gr. i
Sodii biboratis..... gr. iv
Aquæ camphoræ,
Aquæ bullientis, aa..... ℥iv
Misce et filtra.
Sig.—Drop into the eyes t.i.d.

℞ Hydrargyri chloridi corrosivi,
1 : 12,000 to 8000..... ℥i
Sig.—Instil into the eyes t.i.d.

℞ Protargol, 10 per cent..... ℥ss
Sig.—Drop into the eyes t.i.d.

℞ Argyrol, 25 per cent..... ℥ss
Sig.—Drop into the eyes t.i.d.

℞ Argenti nitratis, 2 per cent..... ℥ii
Sig.—Apply with a camel's-hair brush, avoiding the cornea, once a day or on alternate days, followed by normal saline solution (℥i ad Oi).

The silver salts are appropriate in acute cases.

℞ Hydrargyri..... 7.00
Acidi nitrici..... 17.50
Olei morrhuæ (brown or unrefined).. 76.00

Dissolve the mercury in the acid and mix with the oil; then add and mix to 60 parts of this 40 parts of refined codliver oil.

Sig.—Place the ointment in the lower cul-de-sac every other day, and massage for one to three minutes through the upper lid with the eyeball rotated downward; then through the lower lid with the eyeball rotated upward. (Wood and Woodruff.)

Express the follicles as in trachoma (*q.v.*).

Conjunctivitis Gonorrhœica.—Gr. γονή semen + ῥεῖν to flow. An acute purulent, contagious inflammation of the conjunctiva caused by the gonococcus of Neisser.

Gram's method of staining is as follows (Webster): Place a drop of the pus on one end of a clean dry slide, and with a second slide held at an angle of 45° to the first one, touch the drop of pus, and when the latter has spread out by capillarity along the edge of the second slide, draw the latter along the first slide, still maintaining the angle of 45°, and exerting very little pressure. A cigarette paper may also be used as a spreader. Fix the smear thus made by passing it several times through the flame, allow it to cool, then cover with a solution consisting of 84 c.c. of aniline water (water saturated with aniline and filtered) and 16 c.c. of a saturated alcoholic solution of gentian violet. After one to three minutes, pour off the stain, wash in water, and without drying, cover with a solution consisting of one gram of iodine and two grams of potassium iodide dissolved in 300 c.c. of water. After one-half to one minute, wash in water, and treat with 95 per cent. alcohol until all the color is removed. Now wash in water, and cover with a dilute aqueous solution of safranin as a contrast stain. Allow the latter to act for only a few seconds, then wash off with water, dry between folds of filter-paper, and examine under an oil-immersion lens. Gram-positive organisms, *i.e.*, those not decolorized (tubercle b., smegma b., diphtheria b., pneumococcus, streptococcus, staphylococcus, and various saprophytic cocci) are stained deep blue, while the Gram-negative organisms (gonococcus, meningococcus, micrococcus catarrhalis, influenza b., typhoid b., colon b., Kock-Weeks b., and the Morax-Axenfeld b.) and the bodies of the pus cells take the red safranin stain. (Webster.)

Treatment.—Enjoin rest, keep the bowels open, and prescribe a light bland diet, with plenty of water between meals. Interdict alcohol, tea, coffee, ginger ale, carbonated beverages, lemonade, fruit, sour foods, pickles, sauces, salads, spices, condiments, mustard, pepper, horseradish, radishes, tomatoes, asparagus, salty foods, smoked and salted meats, preserved fish, herring, shellfish, cheese, greasy or fried foods, tobacco in excess. Burn the dressings. Protect the sound eye with a Buller's shield or watch crystal fastened with adhesive plaster, open on the temporal side for ventilation, but sealed with collodion on the nasal side.

Douche the eye very gently, three or four times daily, or even every hour or half hour if deemed advisable (taking great care not to abrade the corneal epithelium), with a warm saturated solution of boric acid (gr. xviii to the ounce), or potassium permanganate, 1 : 5000, or bichloride of mercury, 1 : 10,000, or cyanide of mercury, 1 : 5000, or iced physiologic salt solution, ℥i ad Oi (Heckel), using pledgets of absorbent cotton, or a fountain syringe with a bulbous-tipped nozzle, or an irrigating bottle (Fig. 95), or a hollow lid-retractor.

Once daily, apply on a cotton-wound applicator or camel's-hair brush, silver nitrate, 2 per cent. (condemned by Derby and others), or protargol, 40 per cent.; or apply protargol, 10 to 20 per cent., twice daily, or argyrol, 30 to 50 per cent., three

times daily, or oftener. Some (Myles Standish and Bruns) recommend that the conjunctival sac be kept constantly flooded with argyrol solution, 25 per cent. The white film formed by the application of the silver nitrate should be irrigated away completely by normal salt solution, ʒi ad Oi (De Schweinitz; Horwitz). Anoint the lid margins with vaseline.

For œdema of the lids, apply ice-water compresses, every hour or two for ten to twenty minutes in infants, almost continuously in adults, changing every half hour or less often, until the swelling subsides; then discontinue them.

Should the lids become so swollen and tense as to prevent the proper opening of the palpebral fissure, and also as to endanger the cornea by their pressure, widen the fissure at the external angle with scissors; or with a scalpel, cut "from without down to the bone, as far as the margin of the orbit, but leaving the conjunctiva uninjured" (canthotomy). Canthotomy is admissible only in adults.

Should the cornea become hazy or cloudy, stop the ice compresses at once and apply heat and instil once or twice daily, a sterile solution of atropine, gr. iv to the ounce for adults gr. i to the ounce for infants. Should ulceration supervene, employ irrigations of formalin, 1:10,000 to 5000. The actual cautery is advised for commencing ulceration (see Keratitis ulcerosa). In unfavorable cases the discharge may become thin and watery and a membrane form with danger of corneal necrosis. Theobald recommends in these instances quinine in liberal doses. (see Part 11).

As convalescence sets in, reduce the strength of the silver solutions, and later substitute astringents:

℞ Zinci sulphatis..... gr. ss-i
Acidi borici..... gr. x
Aquæ bullientis..... ʒi
M. Sig.—Drop into the eyes t.i.d.

Hydrochlorate of optochin (ethyl-hydrocupreine) is a new gonococcocide that is highly praised. Puscarin reports rapid cure (within a few days to two weeks) by instillations of a 1 per cent. solution every hour, and 2 per cent. every two hours, after previous removal of all discharge with lotions of boracic acid.

P. von Szily reports equally favorable results by vaccine therapy. A culture is made on human serum agar, and from this a vaccine is made twenty hours later. A heat of 60° C. is used for killing the organisms. The first injection is of 300 million and is followed on the next day by double the dose. Daily injections are made, increasing the dosage 100 million each time, for five or six days. The maximum dose contain 800 million killed organisms.

Ionic medication (*q.v.* in Part 1) also has its advocates. Cotton wool wet with a 2 per cent. solution of zinc sulphate is placed within the lids, and a current of 0.5 Ma. passed for three minutes. The treatment is repeated twelve hours later.

Under the usual mode of treatment, gonorrhœal ophthalmia is "seldom cured under four to six weeks." Impairment of vision due to corneal changes results in many cases in spite of all care.

Prophylaxis in Infants.—Instil into the eyes, immediately after birth, two drops of 10 per cent. protargol, or one drop of 1 to 2 per cent. silver nitrate solution.

Conjunctivitis Granulosa.—L. *gran'ulum*, grain. See Conjunctivitis Trachomatosa.

Membranosa.—See Conjunctivitis Crouposa.

Conjunctivitis, Parinaud's.—A lymphomatous conjunctival affection resembling tuberculosis, but showing no ulceration, giant cells, or tubercle bacilli on guinea-pig intra-peritoneal inoculation, nor the fungus of sporotrichosis. Its etiology is unknown.

Conjunctivitis Phlyctenulosa seu Eczematosa seu Scrofulosa.—L. *phlyctæńula;* Gr. φλύκταινα blister; Gr. ἐκζεῖν to boil out; L. *scrof'ula*, "sow pig"; tuberculosis. A localized, usually monocular kerato-conjunctivitis characterized by the occurrence of one or more minute yellowish-red, translucent vesicles or ulcerated nodules on or in the vicinity of the corneal border, about which the conjunctival injection is focalized, accompanied by photophobia, lachrymation, and blepharospasm.

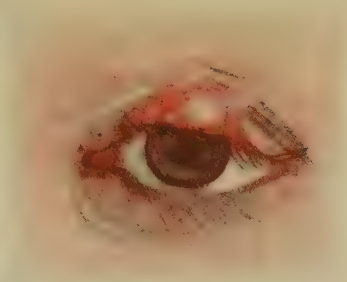
The phlyctenules may be absent and the condition resemble simple catarrhal conjunctivitis, but the presence of blepharitis marginalis or fascial eczema or other manifestation of poor health will indicate the diagnosis, especially if the disease is monocular. If in doubt, treat the affection a strumous conjunctivitis, since astringents are harmful. (Theobald).

The disease responds well to treatment.

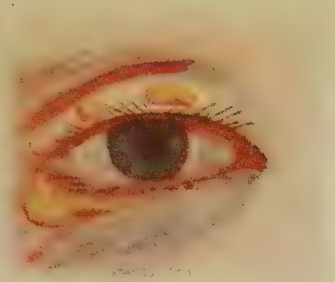
Etiology.—Poor health; tuberculosis; infectious diseases, particularly the exanthemata and influenza; naso-pharyngeal disease; bad hygiene.

Treatment.—Attend first of all to the general health. Enjoin the observance of correct hygiene, *e.g.*, fresh air day and night adequate rest and exercise, rest before and after meals, a daily morning tepid bath before breakfast, in a comfortable room followed by a cool spinal douche and brisk rubdown with a coarse towel, personal and household cleanliness, an abundance of

Eye of two colors.

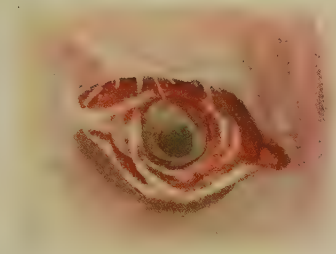


Chalazion.



Xanthelasma.

Lacrymal tumor.



Xerophthalmia with symblepharon.

Sty.

Cataract and arcus senilis

Ectropion.

Epithelioma.

Marginal blepharitis.

Catarrhal conjunctivitis.

Phlyctenular conjunctivitis.

Diseases of the eye.

From life and wax models of Mr. Jumelin. (Tramond-Rouppert.)

simple, wholesome food, regular hours of eating and sleeping, and regulation of the bowels. (See the dietary advised under Eczema of the Lids.) In the beginning, purge the patient with broken doses of calomel followed by a saline. Prescribe a tonic, such as the elixir ferri, quininæ, et strychninæ phosphati, syrupus ferri iodidi, hypophosphites, glycerophosphates, Fowler's solution, codliver oil (see Drugs, Part 11). Theobald advises liberal doses of quinine in the presence of deep ulceration (see Keratitis Ulcerosa). The patient should wear tinted glasses.

℞ Atropinæ ..... gr. i–ii–iv
Acidi borici ..... gr. x
Aquæ bullientis ..... ℥i

M. Sig.—Instil into the eye t.i.d., or often enough and in sufficient strength to keep the pupil well dilated, and to prevent photophobia, lachrymation, and blepharospasm.

Warn the patient that atropine sometimes sets up a marked conjunctivitis with œdema of the lids.

℞ Hydrargyri oxidi flavi ..... gr. i
Petrolati mollis ..... ℥i

M. Sig.—Apply with a wooden toothpick or camel's-hair brush in the morning after instilling the drops. (Theobald.)

The ointment is used only in the presence of ulceration.

De Schweinitz says that where there is much secretion, the use of a 10 per cent. solution of argyrol is "of signal service," employed in conjunction with frequent flushings with a concentrated solution of boric acid (gr. xviii to the ounce).

The application of hot moist compresses to the closed lids affords relief from pain in the acute stage.

For the blepharitis, apply nightly, white precipitate ointment (ung. hydrargyri ammoniati), 1 to 2 per cent.; and rub this also into any eczematous lesions present, and into the nasal passages as far as possible, if rhinitis is present, (Fuchs, see Part 8, on Nose Diseases). Adenoids should be removed. For moist eczema of the face, Fuchs well recommends the application of silver nitrate solution, 5 to 10 per cent., after the removal of crusts, the application to be made at first daily, and later less often.

Conjunctivitis Purulenta.—L. *pus,* gen. *pur'is; purulen'tus.*

Scrofulosa.—See Conjunctivitis Phlyctenulosa.

Simplex.—See Conjunctivitis Catarrhalis.

Spring.—See Conjunctivitis Vernalis.

Conjunctivitis Squirrel Plague.—See Conjunctivitis Tularensis.

Strumosa.—L. *strumo'sus,* scrofulous. See Conjunctivitis Phlyctenulosa.

Toxic.—Gr. τοξικόν poison.

Causes.—Mydriatic and myotic drugs; chrysarobin; dust of aniline dyes; menthol fumes; formaline fumes; artificial fertilizers; calomel, when an iodide is administered internally, causing the local formation of iodide of mercury; insect bites; caterpillar hairs (causing ophthalmia or keratitis nodosa); X-rays; potassium iodide internally; arsenic internally, etc.

Treatment.—Irrigate the eye frequently with warm boric acid solution, ℥i ad Oi, or normal saline solution, ℥i ad Oi.

Conjunctivitis Trachomatosa.—L.; Gr. τράχωμα, -τραχής rough + -ωμα tumor. A chronic contagious disease of the conjunctiva, due possibly to the so-called trachoma bodies of Prowazek-Greef, and characterized by hypertrophy of the papillæ of the tarsal conjunctiva (granular lids) and the occurrence of translucent, gray elevations, resembling boiled sago grains (enlarged follicles) in the conjunctiva of the tarsus and in the retro-tarsal folds, accompanied by a purulent secretion, and eventuating in atrophy, cicatricial contraction with the production of entropion and trichiasis, the presence of cicatricial striæ upon the conjunctival surface of the upper lid, and pannus.

Treatment.—In recent, acute inflammatory cases with much secretion, apply once daily or on alternate days, to the everted lids and retrotarsal folds and superior and inferior cul-de-sacs, silver nitrate, 2 per cent., or protargol, 40 per cent., using for the purpose a cotton-wound applicator, or camel's-hair brush. The white film formed by the silver nitrate may be irrigated away completely with normal saline solution, ℥i ad Oi. The eye should be flooded by the patient, three or four times daily, with boric acid solution, 2 to 4 per cent., or bichloride, 1 : 8000, or formaline, 1 : 5000 to 3000, or freshly prepared chlorine water, 50 per cent. officinal (Part 11); or protargol solution, 10 to 20 per cent., may be instilled twice daily. Should ulceration of the cornea occur, instil, t.i.d., atropine, gr. ii–iv to the ounce (see Keratitis Ulcerosa).

After the acute inflammatory symptoms have disappeared and the secretion has materially diminished, which may require several weeks, discontinue the silver applications, and institute the following treatment:

Instil a drop of 4 per cent. solution of cocaine hydrochloride in the conjunctival

sac, and repeat in four minutes. After a few minutes, apply powdered cocaine to the everted lids with a dampened cotton-wound applicator, with particular attention to the conjunctiva of the retrotarsal folds and the inferior cul-de-sac. In from one and a half to two minutes anæsthesia is practically complete. Now evert the upper lid, and place one blade of Knapp's, Rust's, Noyes's, or Prince's roller expression forceps in the fornix and the other over the tarsal plate, and with firm pressure strip the granules from their bed. Then grasp the superior margin of the tarsal plate with Prince's forceps, and make a second eversion, asking the patient to look down, and thus expose to view the entire retrotarsal conjunctiva, from which every visible granule should be removed. After wiping away the debris with a pledget of cotton, look for any granules that may have been missed, especially in the outer canthus, and use Dewey's trachoma burr to remove those granules which are inaccessible to the roller forceps. Now turn to the lower lid and express the granules in the same manner, using particularly the Dewey burr, with a rubbing and half turn of the instrument, while the thumb nail is placed firmly against the outer wall of the lid in order to steady the narrow tarsal plate. The cornea should be kept flooded with a warm saturated solution of boric acid (gr. xviii to the ounce) during the operation.

After every granule has been removed, cleanse the conjunctival sac with warm boric acid solution, instil one drop of adrenalin, 1 : 1000, and one of argyrol, 25 per cent., place the patient upon a couch, and apply moist compresses as hot as can be borne, until the patient is free from pain, which lasts from one-half to one or two hours.

Thereafter, for a week, the patient should flush the eye three or four times a day with warm boric acid solution, and instil a drop of argyrol solution, 25 per cent., t.i.d. (After C. H. Dewey).

After the inflammatory reaction has subsided, begin the copper sulphate treatment, at first once daily, then every other day, and so on, " until every trace of hypertrophy has vanished and the conjunctiva has become free from congestion and smooth throughout " (Fuchs). This may take months and even years. The copper sulphate is applied lightly to the tarsal plates and fornices in the form of a pencil, preceded by one or two drops of a 4 per cent. cocaine solution (for a few weeks only), and followed by irrigation with warm boric acid or normal saline solution, ℥i ad Oi. " When there is great cicatricial contraction of the conjunctiva," replace the blue stone by a 1 to 2 per cent. ointment of ammoniated mercury, or 1 per cent. yellow oxide of mercury, which should be massaged into the conjunctival sac (Fuchs). The milder alum pencil may be later substituted for the copper. Wood and Woodruff recommend a solution of copper sulphate in glycerine, gr. xc ad ℥i, at first one drop to fifteen drops of water, the strength to be gradually increased. The conjunctiva is first dried before applying the glyceride, which should be applied to all parts with a cotton-wound stick. The eye should be kept cleansed with warm boric acid solution, employed by the patient three or four times daily. When the disease is well under control, the patient may be given an ointment of copper sulphate, 0.5 to 1 per cent., or of copper citrate 5 to 10 per cent., or of thiosinamine, 15 per cent., to be massaged into the conjunctival sac by himself two or three times a day.

Recent pannus (membrane-like, superficial vascularization of the cornea, commonly limited to the upper half) will disappear of itself. When present, instil atropine occasionally, in order to keep the pupil dilated, since a slight iritis with danger of posterior synechiæ is often associated with it. If the upper lid is tense and exerts pressure and friction upon the cornea, thus favoring the development of pannus, do a canthotomy as described by Theobald: " With a pair of straight scissors the external canthus, at one cut, is divided horizontally outward for a distance of 8 or 10 mm. ($\frac{1}{3}$ to $\frac{5}{12}$ inch). The upper lid is then put upon the stretch, and the superior half of the external canthal ligament, which is thus made tense, is cut through with the scissors, the points of which are inserted vertically beneath the upper lip of the skin wound. The first incision will have divided both skin and conjunctiva, and the final step of the operation consists in attaching the edges of the conjunctival wound to those of the skin wound by several fine silk sutures, so that the cut edges of the skin shall not unite one with the other."

If fresh granules appear, they should be expressed or squeezed out by means of the roller forceps or Dewey's burr, or punctured individually with a sharp knife and then squeezed out. Some prefer the grattage operation to the use of the expression forceps. The lids are held completely everted by means of Darier's forceps, and a horn spatula is inserted beneath the lid, to pro-

tect the cornea. The conjunctiva is then thoroughly scarified by means of a special tri-bladed scarificator or scalpel, and then scrubbed with a stiff tooth-brush which has been steeped in bichloride solution, 1 : 1000 (Dr. Coover uses sandpaper which has been soaked in bichloride). After scrubbing, the parts are washed with bichloride solution, 1 : 1000. The subsequent treatment is the same as previously described.

In intractable forms of trachoma, Casey A. Wood warmly advocates removal of the diseased tarsus.

Röntgenotherapy, the high frequency current, and ionic medication (*q.v.* in Part 1) are recommended for trachoma. In employing ionization, cotton wool wet with a 2 per cent. solution of zinc sulphate is placed within the lids, and a current of 1 to 2 + milliampères passed for two minutes.

Subconjunctival injections of cyanide of mercury, 1 : 4000, 10 to 20 minims, are well recommended for pannus. To clear up a very old pannus, the jequirity treatment may be employed; but there is danger of its producing corneal necrosis. Use Römer's jequiritol and jequiritol serum (Merck). "Jequiritol comes in four different degrees of strength. A single drop of No. 1 is instilled into the conjunctival sac by means of a capillary tube. If no severe reaction follows, the dose must be daily increased until a typical jequiritol inflammation develops. Occasionally no reaction occurs until No. 2 is used, when the acute inflammation is finally induced, and subsides in a few days. Subsequently the eye will endure a still stronger dose. Immunity is obtained after a number of inflammatory attacks, and at last the strongest dose produces no effect. If twenty-four hours after the employment of a dose the inflammation appears to be too severe, several drops of the jequiritol serum should be instilled into the eye frequently during the day."

For the treatment of entropion and trichiasis, see these headings. Good hygiene and tonics should not be neglected.

The application of radium (*q.v.* in Part 1) in a glass tube or very thin metal filter for a few minutes (the time increased if necessary) is of great value.

Conjunctivitis Tuberculosa.—See Conjunctival Tuberculosis.

Tularensis.—A very rare, acute, severe inflammation of the conjunctiva, caused by infection with the bacillus tularense of squirrel and rabbit plague, and characterized by the occurrence of multiple, discrete, deep, round, golden-yellow necrotic ulcers, great swelling of the lids, enlargement of the pre-auricular and neighboring lymph glands, elevation of temperature, and constitutional disturbance.

Vaccine therapy has been employed with good results.

Conjunctivitis Vernalis; Spring Catarrh.—L. *vernal'is*, of the spring; Gr. καταῤῥεῖν to flow down. A rare, chronic affection of the bulbar and tarsal conjunctivæ, characterized by the presence of yellowish-brown, velvety looking, gelatinous, slightly raised, flattened, papilliform granulations, presenting the appearance of a "pavement of cobblestones" covered with a milky film, and accompanied by constant itching. The affection may last for from three to ten or more years, with spring and summer exacerbations (being symptomless in fall and winter and in cool weather), and may then disappear.

Both vernal conjunctivitis and the conjunctivitis of hay fever are accompanied by an eosinophilia, so that the two conditions may have a common cause. (Pusey.)

Treatment.—The following measures may relieve the distressing symptoms:

℞ Zinci sulphatis..... gr. ss
Acidi borici..... gr. x
Aquæ bullientis..... ℥i
M. Sig.—Drop into the eyes t.i.d.

℞ Hydrargyri chloridi corrosivi.. 0.004 gm.
Sodii chloridi..... 0.030 gm.
Aquæ destillatæ..... 30.000 c.c.
M. Sig.—Drop into the eyes t.i.d.

℞ Acidi acetici diluti..... gtt. xv–xx
Aquæ..... ℥i
M. Sig.—Instil into the eyes frequently for the relief of itching.

℞ Acidi salicylici..... gr. v
Aquæ..... ℥i
M. Sig.—Drop into the eyes t.i.d.; and massage into the conjunctival sac, once daily, ung. acidi salicylici, gr. iii ad ℥ss. (Randolph.)

℞ Antipyrinæ..... gr. xlviii
Aquæ..... ℥i
M. Sig.—Drop into the eyes as required.

℞ Protargol, 2 to 3 per cent..... ℥i
Sig.—Instil into the eyes three or four times a day.

℞ Adrenalini chloridi, 1 : 1000... ℥ss
Sig.—One drop in the eye, as required. (Fuchs.)

℞ Glyceriti boroglycerini ..... ℥i
Sig.—Apply to the everted lid by means of a cotton-wound applicator. (De Schweinitz.)

℞ Solutionis acidi borici, 2 to 4 per cent..... ℥iv
Sig.—Instil, warm, t.i.d.; and apply ung. hydrarg ox. flav., gr. i ad ℥i, twice a day.

Smoked glasses may be worn. Cold compresses applied frequently afford relief. The patient should keep as cool as possible. Arsenic (see Part 11) internally may be tried. The roller forceps may be employed in the palpebral type (see Trachoma). Radium and the X-ray employed as in trachoma (*q.v.*) are said to be curative.

Contraction of the Pupil.—L. *contrac'tio*; *pupil'la*, girl. See Myopia.

Contusion of the Eyeball.—L. *contu'sio*, from *contun'dere*, to bruise. See Injuries of the Eye.

Convergence, Latent or Esophoria.—L. *con*, together + *ver'gere*, to incline; *lat'ens*, hidden; Gr. ἔσω inward + φέρειν to bear. See Muscular Anomalies.

Cornea, Abscess of the.—L. *cor'neus*, horny; *absces'sus*, a going apart. See Keratitis Ulcerosa.

Burns of the.—See Injuries of the Eye.

Conical.—L. *co'nus*; Gr. κῶνος cone. See Keratoconus.

Dryness of the.—See Xerosis; Xerophthalmos.

Fistula of the.—L. *fis'tula*, pipe. See under Keratitis Ulcerosa.

Foreign Bodies in the.—See Foreign Bodies in the Eye.

Herpes of the.—L. ; Gr. ἕρπης; herpetic means vesicular. See Keratitis Neuropathica.

Inflammation of the.—L. *inflammare*, to set on fire. See Keratitis.

Injuries of the.—See Injuries of the Eye.

Opacities of the.—L. *opac'itas*. The causes are corneal inflammation, severe iritis and uveitis, and corneal traumatism. Arcus senilis, "the ring of degeneration seen about the corneal periphery in aged persons" (Dorland), occurs spontaneously and is of no therapeutic importance.

The following untoward consequences may obtain, viz., obstruction of vision, refractive errors and resulting asthenopia, myopia, strabismus, nystagmus. "Incarceration of the iris in the corneal scar entails two dangers—increase of tension (glaucoma) and purulent inflammation of the interior of the eye." (Fuchs.)

Treatment.—Recent, slight opacities may be improved by systematic, gentle massage of the cornea through the eyelid, after the introduction of ung. hydrargyri oxidi flavi, gr. i ad ʒi of vaseline or cosmoline or liquid albolene, into the conjunctival sac. The massage must be persisted in for months or even years, if necessary. The instillation of one drop of dionin solution, 5 per cent., three or four times daily, is of additional service. It produces an œdematous reaction at first. Subconjunctival injections of dionin, 4 to 5 per cent., or salt solution, 1 to 5 per cent., or cyanide of mercury, 1 : 4000, 10 to 20 minims, are also advocated. Chlorine ionization may be tried (see Ionic Medication in Part 1). The negative electrode is placed over the closed lids, the lachrymal secretion containing the requisite sodium chloride, and a current of 1 to 2 + milliampères is passed for two or three minutes.

Where the opacity involves only the epithelium, the result of irritation in trichiasis or of the imbedding of lead, lime, or powder grains, remove the affected epithelium with the knife. Such superficial opacities, however, are rare.

Where the opacity overlies the pupil, an iridectomy should be performed.

Where a part of the pupillary area of the cornea is clear and another part cloudy, causing confused vision and interfering with reading, stenopœic glasses (Gr. στενός narrow + ὀπή opening) may be used, the aperture being held in front of the transparent portion of the cornea.

Dense opacities may be rendered less conspicuous by tattooing with India-ink; or better, according to Verhoeff, by the injection of India-ink suspended in normal saline solution, using a hypodermic syringe, taking care not to force the suspension past the scar margin.

Cornea, Protrusion of the.—See Cornea, Staphyloma of the.

Softening of the.—See Keratomalacia.

Staphyloma of the.—Gr. σταφυλή grape + -ωμα tumor; σταφύλωμα. Protrusion of the cornea and iris, caused by a penetrating wound or deep corneal necrosis and ulceration, usually gonorrhœal.

Treatment.—If seen in its incipiency, apply a pressure bandage continuously, but not too tightly, and enjoin absolute quiet, the avoidance of straining at stool, etc. If deemed advisable, a paracentesis may be performed and repeated if necessary, or in clean cases an iridectomy, or Knapp's operation of "partial abscission," or Elliot's sclero-corneal trephining. Do not operate, however, "if in a partial staphyloma (*i.e.*, one confined to a limited area of the cornea) the vision is good, and there is no tendency to an increase of the ectasia." In total staphyloma, on the other hand, "enucleation of the eye is commonly indicated," to forestall infection (chiefly after Theobald).

Cornea, Traumatism of the.—Gr. τραῦμα wound. See Injuries of the Eye.

Cornea, Tuberculosis of the.—See Conjunctival Tuberculosis.

Ulcer of the.—See Keratitis Ulcerosa.

Wounds of the.—See Injuries of the Eye.

Corneitis.—See Keratitis.

Cross-Eyes.—See Squint.

Croupous Conjunctivitis.—See Conjunctivitis Crouposa.

Crystalline Lens.—Gr. *κρύσταλλος* ice. See Lens.

Cyclitis.—Gr. *κύκλος* ring + *-ιτις* inflammation. Inflammation of the ciliary body is usually but a part of inflammation of the uveal tract (iris, ciliary body, and choroid). Tenderness (on palpation with the end of a probe) in the ciliary region is an important diagnostic sign. Consult Iritis for symptomatology, etiology, and treatment.

Cycloplegia.—Gr. *κύκλος* circle + *πληγή* stroke. See Accommodation Anomalies.

Cylindroma Conjunctivæ.—Gr. *κύλινδρος* cylinder + *-ωμα* tumor. See Conjunctival Tumors.

Cyst, Conjunctival.—Gr. *κύστις* bladder. See Conjunctival Tumors.

Cyst, Lachrymal Gland; Dacryops.—L. *lacrima*, tear; *glans*, a cord; Gr. *δάκρυ* tear + *ὤψ* eye. See Orbital Tumors.

Meibomian.—H. Meibom (1638–1700). See Chalazion.

Orbital.—See Orbital Tumors.

Tarsal.—Gr. *ταρσός* foot. See Chalazion.

Dacryoadenitis.—Gr. *δάκρυ* tear + *ἀδήν* gland + *-ιτις* inflammation. Inflammation of the lachrymal gland is either acute or chronic. The acute form may resemble orbital cellulitis (*q.v.*); the chronic form is marked by enlargement and tenderness.

Etiology.—Traumatism; "cold"; influenza; mumps; smallpox; syphilis; tuberculosis; gonorrhœa; leukæmia; rheumatism; gout; conjunctivitis, and keratitis.

Treatment.—Treat acute cases the same as cellulitis (*q.v.*). In chronic cases, prescribe mercury and iodide, internally, and ung. hydrargyri or ung. iodi externally (see Drugs, Part 11.) Excise the gland if it is very large.

Dacryocystitis.—Gr. *δάκρυ* tear + *κύστις* sac + *-ιτις* inflammation. **1. Acute Suppurative Inflammation of the Lachrymal Sac.**—Etiology.—Chronic dacryocystitis; entrance of irritating fluids; traumatism; exanthematous fevers (measles, scarlet fever, smallpox); caries of the lachrymal bone (very rare).

Treatment.—Open the bowels with calomel, followed by a saline, or with castor-oil, and administer, according to Theobald, sodium pyrophosphate (see Drugs, Part 11). Apply moist, hot compresses, and irrigate the nose on the affected side, using a fountain syringe, with hot normal saline solution (℥i ad Oi), in the hope that the abscess may break into the inferior meatus, which it may be expected to do unless cicatricial stenosis of the nasal duct is present. In irrigating the nose, place the patient's face horizontally over a basin and instruct him to breathe through the mouth and to refrain from swallowing, in order to avoid the entrance of fluid into the eustachian tube.

If the abscess can not be evacuated through the nose, owing to cicatricial stenosis of the nasal duct, continue the local application of heat, and as soon as fluctuation appears, incise the lachrymal sac downward and outward, evacuate the contained pus, and insert a gauze drain. Renew the latter each day until the inflammation has disappeared; then, before the fistula is allowed to close, restore the patency of the nasal duct by means of sounds, as described under chronic dacryocystitis, following. If the fistula does not then close, cauterize the edges or refresh and suture them.

If the patency of the duct can not be maintained, resort to a dacryocystorhinostomy (see below).

II. Chronic Inflammation of the Lachrymal Sac.—Chronic dacryocystitis is manifested by the presence of epiphora, or tear-drop, and more or less fulness in the region of the lachrymal sac, pressure upon which causes a mucopurulent or thin, limpid mucous fluid to issue from the puncta. Acute inflammatory exacerbations are prone to occur.

Etiology.—Obstruction of the nasal duct, due to (1) inflammatory turgescence of the mucous membrane occurring in chronic rhinitis; (2) cicatricial stenosis occurring as a result of ozœna or ulceration (syphilitic or tuberculous); (3) tumors, usually polypi; (4) traumatism; (5) persistence in the newborn of the "thin diaphragm of mucous membrane which in the fœtus closes the lower orifice of the nasal duct." Other causes of dacryocystitis are local trachoma, tuberculosis, and traumatism. A flattened or saddle-back nose predisposes.

Treatment.—A cicatricial stricture of the nasal duct requires gradual dilatation by means of Theobald's probes. Theobald's procedure is as follows: Instil several times, alternately, into the inner corner of the eye, cocaine solution, 4 per cent. (or holocaine, 1 per cent.), and adrenalin, 1 : 1000 (or three drops of adrenalin may be added to each c.c. of 5 per cent. cocaine solution). Then probe the lower canaliculus with a No. 1, followed by a No. 2 probe. If a stricture is

encountered which these probes cannot pass, use the straight, sharp-pointed probe and bore through the stricture into the lachrymal sac. Then slit the canaliculus up into the sac as described under Epiphora. Now attempt to pass through the nasal duct into the nose as large a probe as possible, usually a No. 5, first lubricating it with sterile vaseline. Standing behind the patient, and keeping the lower lid upon the stretch, pass the probe horizontally along the canaliculus until the sac is entered, then turn the probe vertically, and pass it slowly through the duct to the floor of the nose, directing its point to the furrow between the ala of the nose and the cheek. At the end of ten to twenty minutes withdraw the probe.

If neither a No. 5 nor a No. 4 probe can be made to enter the stricture, use the "supplementary probe," and, if this fails, wait forty-eight hours and try again. If then unsuccessful, bore through the stricture with the straight, sharp probe, or divide it with a narrow-bladed, Sichel cataract knife.

Repeat the probing every other day, passing each time, if possible, a larger size probe, until a No. 16 can, if possible, be passed, considerable force being sometimes required.

After the duct has been thus thoroughly dilated, gradually diminish the frequency of the probings, first to every three or four days, then once a week, two weeks, a month, two months, and cease when the duct no longer tends to recontract. Eight to ten months may be required for a cure. After the duct has been thoroughly dilated, the patient may be given a probe for occasional use at home.

During the treatment, have the patient press out the contents of the sac thrice daily, and drop into the inner corner of the eye, bichloride of mercury, 1:12,000 to 8000, in sodium chloride solution, 1 per cent.; or alum, gr. i–ii, and boric acid, gr. x, in water, ℥i; or protargol, 2 per cent. If nasal catarrh is present, have him spray the nose thrice daily, by means of a hand atomizer, with the following:

℞	Hydrargyri chloridi corrosivi ..	gr. ss
	Sodii chloridi	gr. xv
	Glycerini	℥ss
	Aquæ destillatæ	℥ivss

Ammonium chloride in doses of gr. x may be administered internally (after Theobald).

If a cure by sounds cannot be accomplished, one may bore a hole through the internal wall of the lachrymal sac into the nasal cavity by means of a dental burr, after opening the sac by an incision starting at the upper canaliculus (J. A. Pratt); or a more extensive dacryo-cysto-rhinostomy may be performed, either from above or below. Formerly the lachrymal sac was extirpated, and later, if epiphora was troublesome, the inferior lachrymal gland was removed.

Dacryolith.—Gr. *δάκρυον* tear + *λίθος* stone. See Epiphora.

Dacryops; Cyst of the Lachrymal Gland.—Gr. *δάκρυ* tear + *ὤψ* eye; Gr. *κύστις* cyst; L. *lac'rima*, tear; *glans*, a cord. See Orbital Tumors.

Day-Blindness.—See Hemeralopia.

Dendritic Keratitis.—Gr. *δένδρον* tree. See Keratitis Neuropath. and Keratitis Ulc.

Dermatolysis of the Eyelid.—Gr. *δέρμα* skin + *λύσις* loosening. See Blepharochalasis.

Dermoid of the Conjunctiva.—Gr. *δέρμα* skin + *εἶδος* form. See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

Fig. 103.—Serous Detachment of the Retina in Myopia

A woman of sixty-two, having previously been very myopic, had for four years suffered from a cataract in the right eye. After the removal of the cataract by operation, the lower half of the retina proved to be detached, thrown into folds and tremulous. The upper border of the detached retina lay upon the lower border of the papilla, and concealed it. To the outer side the detachment is sharply demarcated from the normal fundus, while to the inner side it spreads out quite gradually into two or three flat folds. On the crests of the folds the detached retina looks lighter than in the depressions between them. The retinal vessels running downward from the papilla soon after they start disappear behind the overhanging edge of the detached portion of the retina, and are apparently interrupted at this spot. In their subsequent course they are distinguished by the remarkably sharp bends they make and which follow the folds of the detached retina. The outer side of the optic disk is bordered by a white atrophic crescent, which is about half the width of the papilla, and is attributable to the myopia pre-existing in the eye. The outlines both of this papilla and the crescent are hazy. The rest of the fundus is tessellated—i. e., displays the chorioidal vessels and the dark intravascular spaces.

Descemetitis.—Inflammation of Descemet's membrane, the posterior lining membrane of the cornea. See Iritis.

Detachment of the Iris.—See Injuries of the Eye, under Penetrating Wounds.

Retina.—Retinal detachment is characterized clinically by limitation of the field of

vision, the appearance as of a dark cloud or curtain veiling parts of objects, and perhaps "flickering and confusion of sight." The ocular tension is usually subnormal, unless an intra-ocular growth is present, when it is increased.

The Prognosis is serious, but operative treatment is not infrequently curative. (Fig. 103.)

Etiology.—Traumatism; chronic uveitis; hemorrhage from the choroid; intra-ocular tumors and cysts; high myopia; senility.

The immediate cause may be a fall, blow, violent coughing, vomiting, heavy lifting, etc.

Treatment.—It is perhaps best to operate as soon as practicable, and remove a small scleral button from under a conjunctival flap over the site of the detachment, by means of the Elliot trephine. The choroid which then protrudes may be grasped and clipped away with curved, flat scissors, so that the retina may be forced into the opening of the choroid and there become adherent (Tiffany). The conjunctival flap is sutured with fine silk, and a moderate pressure bandage applied. The patient is then returned to bed, and atropine drops (gr. ii–iv ad ℥i) instilled. If the retina does not fall back into place, push the needle of an aspirating syringe through the conjunctiva and the trephine opening and draw off the subretinal fluid. The patient should be kept in bed for a few days.

A subretinal hydatid cyst may be successfully extracted through the sclera.

If surgical treatment is not feasible, one may try the dubious plan of confining the patient to bed for several weeks, instilling atropine, applying a moderate pressure bandage, administering laxatives, and promoting diaphoresis by means of pilocarpine, followed later by potassium iodide (see Drugs, Part 11), this treatment to be persisted in for several weeks if improvement occurs. Subconjunctival injections of sterile salt solution are also advised, the injections to be given every two or three days, increasing the strength from 2 to 5 per cent., and the quantity from 15 to 25 minims; but H. W. Woodruff declares that they have not been proven of any value in this affection.

Dilatation of the Pupil.—L. *pupil'la*, girl. See Mydriasis.

Diphtherial Conjunctivitis.—See Conjunctivitis Crouposa.

Diplopia.—Gr. *διπλόος* double + *ὄψις* vision. **I. Binocular Diplopia.**—Diplopia present only in binocular vision, disappearing when one eye is shut, is due to a deviation of one of the eyeballs whereby the images of an object fall upon non-corresponding parts of the two retinæ, as in strabismus, displacement of one eyeball by a tumor, and limitation of the excursions of the eye by a symblepharon or pterygium. The "true" image is more distinct than the "false" or displaced image.

Binocular diplopia is "homonymous" when the displaced image is on the side of the affected eye, as in convergent squint, which may be ascertained by closing one eye, then the other, and asking the patient which image in each instance disappears. It is "heteronymous" or crossed in divergent squint, in which the left image belongs to the right eye and the right image to the left eye.

The two images are on a different level when the axes of the two eyes are not on the same horizontal plane; and they are inclined in relation to each other when one eye is rotated about its sagittal axis.

Squint may be present, however, without diplopia, as when one eye is blind, or when vision in the squinting eye is suppressed or psychically ignored. To determine in squint whether binocular vision is present or whether one of the images is suppressed, place a prism, base downward, before one of the eyes. If two images are not now seen, one of the images is being suppressed. Binocular vision may also be tested by holding a ruler vertically a few centimetres in front of the patient's nose, with the edge of the ruler toward the nose, and then ascertaining if the patient can read without moving his head to one side or the other of the printed page.

II. Monocular Diplopia.—Diplopia present when one eye (the sound eye) is shut is caused by the following conditions, viz., irregular astigmatism; subluxation of the lens; incipient cataract; a double pupillary opening (as in iridodialysis, perforation of the iris, and division of the pupil into two parts by an opaque strand, etc.); "irregular cramp of the ciliary muscle"; "complete or partial constriction of the eyelids, by which they are made to impinge on the cornea"; hysteria; "organic disease of the brain or its membranes, associated with abducens paralysis." Simulation should be excluded.

Dislocation of the Lens.—L. *dis*, apart; *locar'e*, to place; *lens*, lentil. In examining the eye, first dilate the pupil with an evanescent mydriatic, *i.e.*, homatropine hydrobromate, 1 per cent., or euphthalmine hydrochlorate, 5 per cent., and employ both oblique illumination (*q.v.*) and the ophthalmoscope. Tremulousness of the iris nearly always occurs when the lens is dislocated backwards.

Etiology.—Congenital anomaly; trauma; hydrophthalmus; staphylomata; chorioiditis; myopia of high degree; detachment of

the retina; hypermature cataract with stretching and atrophy of the zonula.

Treatment.—Perform an iridectomy, as broad as need be, and extract the lens. If the lens is dislocated into the vitreous, lift it out, under good illumination, by slipping a Knapp's loop behind it, or by seizing it with Stevens' hook, raising it up to the incision, and passing a Smith spatula behind it, after which it is slid out by pressure applied from the outside of the cornea—pushed, not lifted out. (Howard S. Paine.)

If extraction of the lens is not feasible, and no inflammatory symptoms (irido-cyclitis; glaucoma) are present, prescribe suitable glasses for the correction of the visual disturbance. If irido-cyclitis or glaucoma is present, an iridectomy should be performed in order to combat the inflammation or increase of tension; but the lens should also be extracted, if possible. Always perform extraction in dislocation into the anterior chamber, as otherwise the eye is lost (Fuchs). If the inflamed eye is blind, enucleate it, to avert sympathetic ophthalmia in the other eye.

Distichiasis.—Gr. *δίς* twice + *στίχος* row. See Trichiasis.

Divergence, Latent, or Exophoria.—L. *dis*, apart + *ver'gere*, to tend; *látens*, hidden; Gr. *ἔξω* out + *φορεῖν* to bear. See Muscular Anomalies.

Double Vision.—L. *vis'io*, *vid'ere*, to see. See Diplopia.

Drooping of the Upper Lid.—See Ptosis.

Dry Catarrh.—See Conjunctival Hyperæmia.

Dryness of the Conjunctiva and Cornea.—See Xerosis; Xerophthalmos.

Ecchymosis.—See Black Eye.

Ectasia Corneæ.—Gr. *ἐκ* out + *τείνειν* to stretch. See Cornea Staphyloma of the.

Scleræ.—See Sclera, Staphyloma of the,

Ectropion.—Gr. *ἐκ* out + *τρέπειν* to turn. Eversion of the Eyelid.

Etiology.—Blepharospasm; senile relaxation of the lids; paralysis of the orbicularis muscle (seventh nerve; see Part 1); cicatricial contraction, due to burns, ulcers, wounds, or orbital caries; chronic inflammation of the lid and conjunctiva, with hypertrophy; eczema of the lid and cheek; stye or tumor of the lid.

Senile relaxation and seventh nerve paralysis affect only the lower lid.

Treatment.—In slight cases in which the resulting epiphora is the most annoying symptom, merely slit the lower canaliculus, as described under Epiphora.

In spasmodic ectropion, correct the eversion and apply compression with a bandage for two or three days. If this fails, introduce a silk thread through each lid, and tie it on the outside over a piece of small rubber tubing, tight enough to bring the margins of the lids back into their proper position. Remove the thread at the end of four days.

The application of a bandage at night may give relief in senile, spasmodic, and paralytic cases.

For marked cases of ectropion a plastic operation is required.

Eczema of the Conjunctiva.—Gr. *ἐκζεῖν* to boil out. See Conjunctivitis Phlyctenulosa.

Lids.—An acute, subacute, or chronic, itching, catarrhal inflammation of the skin, of variable character (erythematous, papular, vesicular, pustular, squamous), with usually a sticky oozing or weeping, or a history of such, and with more or less epidermic thickening and a tendency to crust or scale formation.

Etiology.—(a) Constitutional: Habitual overeating, dyspepsia, constipation, obesity, lithæmia, defective kidney elimination, general debility, improper or insufficient food, physical or mental overwork, irregular habits, shock, neurasthenia, hysteria, nerve injuries, asthma, reflex irritation (dentition, adherent prepuce, movable kidney, uterine disturbances, etc., no doubt giving rise to nervous irritability and resulting impairment of the general bodily functions), tuberculosis, anæmia, nephritis, diabetes mellitus and insipidus, malaria, intestinal parasites.

(b) Local: Epiphora; dacryocystitis; conjunctivitis; eye-strain; chronic rhinitis; chemical irritants, *e.g.*, sulphur, tar, chrysarobin, turpentine, mercurials, iodoform, benzine, lime, paints, dyes, antiseptics, polishing materials, pastes, sugar, flour, tobacco, acids, alkalies, strong soap, the excessive use of water and soap, etc.; mechanical irritants, *e.g.*, parasites (pediculi, fleas, bed-bugs, etc.), scratching, cold, heat, sea air, winds, sunlight.

Treatment.—Enjoin the observance of correct hygiene, *e.g.*, adequate rest and exercise, regular hours of eating and sleeping, rest before and after meals, a plain but nutritious diet, proper bowel activity, fresh air day and night, avoiding draughts, and adequate dry clothing. The following articles of food should be avoided, viz., pork in any form, salted meats, cooked-over meats, veal, "gamy" fowl, crabs, lobsters, fried foods, gravies, pastries and cakes, hot breads, hot griddle cakes, sweets and confections, syrups, soups, sauces, cheese, pickles, condiments, spices, sweet potatoes, Irish potatoes, cabbage, fried eggplant, tomatoes, oatmeal, bananas, apples, tea, coffee, alcohol, and tobacco. The diet should consist chiefly of bread and butter, milk, eggs, fresh, plainly

cooked vegetables, fresh fish, chicken occasionally, with other meats no oftener than once or twice a week. A glassful of hot water containing soda bicarbonate, gr. xv, or Vichy should be drunk one hour before meals and between meals. Potassium acetate or citrate, gr. x, t.i.d., may be added.

In acute cases, apply mild, soothing lotions until the swelling subsides, *e.g.*,

℞ Calaminæ,
Zinci oxidi, aa ..... ʒi–ii
Acidi borici ..... ʒi
Glycerini ..... ♏v–xv
Acidi carbolici ..... ♏viii–xxx
Liquoris calcis ..... ʒi
Aquæ, q.s., ad ..... ʒiv
M. Sig.—Shake well, and apply as often as required to effect relief.

℞ Lotionis nigræ,
Aquæ calcis, aa ..... ʒii
M. Sig.—Shake well, and apply frequently. (Full strength of black wash may be used.)

℞ Solutionis aluminii acetatis (Part 11) ..... ʒiv
M. Sig.—Dab on freely three or more times daily.

When the acute symptoms have subsided, gently remove all crusts after softening with a bland oil (olive, cottonseed or almond), and apply one of the following ointments:

℞ Hydrargyri ammoniati ..... gr. v–x
Adipis lanæ hydrosi,
Petrolati mollis, aa ..... ʒss

℞ Zinci oxidi ..... gr. x–xl
Adipis lanæ hydrosi,
Petrolati mollis, aa ..... ʒss

℞ Hydrargyri oxidi flavi ..... gr. x
Adipis lanæ hydrosi,
Petrolati mollis, aa ..... ʒss

℞ Acidi salicylici ..... gr. x
Adipis lanæ hydrosi,
Petrolati mollis, aa ..... ʒss

In vesicular eczema, apply a drying powder consisting of about equal parts of starch, zinc oxide, and camphor.

In chronic cases, try the above mild remedies, and if these prove insufficient, resort to the stronger preparations following:

℞ Picis liquidæ ..... ♏x–xxx
Zinci oxidi ..... ʒi
Unguenti aquæ rosæ, q.s., ad ..... ʒi

℞ Acidi salicylici ..... gr. xv
Hydrargyri ammoniati ..... gr. x
Liquoris picis carbonis ..... ʒi
Petrolati mollis, q.s., ad ..... ʒi

Applications of silver nitrate solution, 5 to 10 per cent., after the removal of crusts, are very useful.

Eczematous Conjunctivitis. — See Conjunctivitis Phlyctenulosa.

Edema of the Lids.—See Œdema of the Lids.

Enchondroma, Orbital.—Gr. ἐν in + χόνδρος cartilage + -ωμα tumor. See Orbital Tumors.

Endothelioma, Orbital.—Gr. ἔνδον within + θήλη nipple + -ωμα tumor. See Orbital Tumors.

Entropion.—Gr. ἐν in + τρέπειν to turn. Inversion of the Eyelid. Occurring in the upper lid, it causes trichiasis (*q.v.*).

Causes.—Blepharospasm; senile relaxation of the lid; shrunken or absent eyeball; bandaging the eye after operations; cicatricial contraction, due to trachoma, diphtheria, pemphigus, conjunctival burns, traumatism, etc.

Treatment.—Slight, non-cicatricial cases may be benefited by painting contractile collodion on the lid every two or three days after cleansing the skin with alcohol or ether. If this is ineffectual, an operation is required as for the cicatricial variety.

Enucleation and Evisceration of the Eyeball.—

I. Enucleation.—Sever the conjunctiva close to the cornea with scissors or a curved bistoury with blunt point. Open the capsule of tenon in order to get at the muscle attachments to the sclera. With the point of the hook in constant contact with the sclera introduce it beneath the rectus muscle tendons, and cut the latter close to the sclera, excepting the internal or external rectus, which is left so as to have something to grasp in rotating the eyeball. Rotate the latter far outward, introduce scissors above the nerve, bring them down until they touch the nerve, then open them and slide the blades around the nerve and sever it. Then sever the oblique muscles. Apply digital compression with gauze over the lids until hemorrhage ceases. The conjunctiva or muscles need not be sewn.

II. Evisceration.—Evisceration leaves a better stump for an artificial eye than enucleation. There is no danger of subsequent sympathetic ophthalmia. In panophthalmitis it is preferable to enucleation because of the avoidance of meningitis.

Sever the conjunctiva close to the cornea with scissors or a blunt-pointed curved bistoury. With a sharp knife puncture the sclera about 2.5 mm. from the cornea, push the knife blade through the eye and make a corresponding counter incision on the opposite side, then cut a flap above, and remove the rest of the front of the eyeball with scissors. Now, with a bone curet, scrape out all of the choroid down to the white sclera. The choroid is firmly attached at

the optic nerve and anteriorly in the ciliary region. No sewing is required. An artificial eye may be inserted in four weeks.

Epiphora; Tear Drop.—Gr. ἐπιφορά downflow. An abnormal overflow of tears down the cheek. Chronic conjunctivitis, blepharitis, and eczema are possible consequences.

Etiology.—Local irritation, due to foreign bodies (*q.v.*), inflammation, smoke, wind, irritation of the retina by intense light, eyestrain (*q.v.*) neuralgia of the first and second branches of the trigeminus, and rhinitis; lagophthalmus (*q.v.*); ectropion (*q.v.*), entropion (*q.v.*); abnormal position or enlargement of the caruncle; atresia of the lachrymal puncta, either congenital or due to burns, or inflammation, or desiccation, as in blepharitis complicated by ectropion; atresia of the canaliculi, either congenital or due to traumatism, ulceration, polypi, dacryoliths or tear stones (due sometimes to a form of streptothrix), or foreign bodies, especially eyelashes; small or deep y set eye; dacryocystitis (*q.v.*); stricture of the nasal duct (*q.v.*); neurasthenia; tabes dorsalis; exophthalmic goitre; senility.

Treatment.—Attend to the cause (*q.v.*, in its alphabetical place).

Canalicular stenosis due to swelling of the lining membrane may be relieved by the injection of astringents through an Anel syringe, *e.g.*, zinc sulphate, gr. i–ii, and boric acid, gr. xv, in water, ʒi.

Open a stenosed punctum by means of a gold or silver pin or dilator or Theobald's sharp-pointed probe; then test the patency of the lachrymal duct by injecting boric acid solution, 3 per cent., through an Anel syringe.

In all malpositions of the puncta, slit the corresponding canaliculus (almost always the lower). First anæsthetize with cocaine, 4 per cent. solution, and dilate the canal with a small probe. Then standing behind the patient and holding the lower lid upon the stretch, introduce the straight, probe-pointed canaliculus knife, anointed with sterile vaseline, vertically into the punctum, then horizontally up to the junction with the sac; then, with the blade turned upward and slightly backward, raise the handle of the knife and so divide the canaliculus. Separate the cut edges every forty-eight hours, to prevent closure, with a probe anointed with vaseline. (After Theobald.)

In atresia of the canaliculus, pass probes and slit the canaliculus. If the latter is obliterated, make an artificial opening into the lachrymal sac, following the usual course of the canaliculus.

The canaliculus may have to be divided in removing tear-stones or polypi.

Eyelashes, if they project through the puncta, may be removed with forceps; otherwise the canaliculus may have to be slit.

For senile epiphora, prescribe an astringent collyrium,

℞ Zinci sulphatis ..... gr. i–ii
Acidi borici ..... gr. xv
Aquæ bullientis ..... ʒi
M. Sig.—Drop into the eyes, t.i.d.

Episcleritis.—Gr. ἐπί upon; σκληρός hard; + -ιτις inflammation. Subconjunctival or superficial scleritis, as distinguished from the deep form of scleritis, which see.

Episcleritis is characterized by a dusky-red or violet-hued, circumscribed elevation of the sclera, which persists for several weeks, and is prone to recur. It is not movable on the wall of the sclera, as is a conjunctival lesion. Vision is not affected.

The so-called "hot eye" is a "fugaceous periodic episcleritis," of sudden onset, lasting from two to eight days, and recurring at intervals of several weeks or months, often associated with gout or rheumatism.

The treatment of episcleritis is not very satisfactory.

Etiology.—Gout; rheumatism; enterogenous or auto-intoxication; infectious diseases (influenza, tuberculosis, etc.); exposure to inclement weather; sinusitis; menstrual disorders

Treatment.—Attend to any possible etiological influence, and enjoin the observance of correct hygiene, *e.g.*, adequate rest and daily exercise, frequent bathing, an occasional Turkish bath if the heart is good, fresh air day and night, adequate dry, warm clothing, regular hours of eating and sleeping, rest before and after meals, free bowel activity (a morning saline, if need be, such as sodium phosphate, or Carlsbad salts, Part 11), copious water drinking, temperance in eating, and avoidance of worry. The following foods are interdicted (the most of them because of their rich purin content, some because of indigestibility or of acidity): alcohol, game, sweetbreads, liver, kidney, brain, sausages, smoked meats, meat extracts, meat soups, broths, gravies, salt fish, fish roe, caviar, crabs, lobsters, sharp cheeses, mushrooms, peas, beans, lentils, oatmeal, celery, onions, garlic, radishes, asparagus, cucumbers, sorrel, tomatoes, cabbage, hot breads, corn breads, pastries, candies, preserves, much salt, vinegar, condiments, spices, tea, coffee, cocoa, bananas, strawberries, cherries, dates. The following foods are allowed: milk, buttermilk, koumyss (see Part 11.), junket, cream, butter (2½ to 3½ ounces a day—Ebstein), eggs, custard, mild cheese, olive oil,

white bread, rice, macaroni, tapioca, sago, potatoes, spinach, sprouts, beet tops, cauliflower, lettuce, chicken, crisp bacon, fresh fish, oysters, white and red meat in moderation, pears, green figs, mild oranges.

In an acute attack, open the bowels thoroughly with calomel, gr. ii–viii, followed by a saline (Part 11) and prescribe wine or tincture of colchicum, ♏xv–xxx, in water, every two hours for eight or ten doses, then every four hours for three or four days, or until the condition is relieved or symptoms of poisoning occur, *e.g.*, nausea, vomiting, diarrhœa, and cardiac depression. Colchicine or colchicine salicylate, gr. $\frac{1}{50}$, every four hours, may be used instead, if desired.

If colchicum affords no relief, try sodium salicylate or aspirin, gr. x–xx every two to four hours, or phenacetin or antipyrine (see Part 11; see also Gout in Part 1).

For the relief of pain, apply hot fomentations to the lids, every two hours, or Theobald's opium and boric acid lotion:

℞ Extracti opii ..... gr. x
Acidi borici ..... gr. xl
Aquæ ..... ℥iv

Burnet says: "Heat is the best local remedy." The application of six to ten leeches, or a Heurteloup artificial leech to the temple also affords relief.

For pain, photophobia, lachrymation, and ciliary irritation, instil atropine:

℞ Atropinæ ..... gr. i–ii–iv
Acidi borici ..... gr. x
Aquæ bullientis ..... ℥i

M. Sig.—Instil one drop, warmed, every three or four hours (the strength should depend upon the degree of photophobia, lachrymation, and ciliary irritation present).

Smoke-tinted glasses should be worn. De Schweinitz says: "Dionin is of distinct service": one drop of a 4 to 5 per cent. solution, t.i.d. Subconjunctival injections of normal saline solution (0.6 to 0.9 per cent.), or, better, cyanide of mercury, 1 : 4000, 10 to 20 minims, are of value.

In chronic cases (not in acute, painful cases) ung. hydrargyri oxidi flavi, gr. i ad ℥i, may be inserted within the conjunctival sac and the eyeball massaged through the closed lids. Ionic medication (*q.v.* in Part 1) is also recommended. Cotton wool wet with a solution of sodium salicylate or sodium chloride is placed within the lids, and a current of 5 to 10 milliampères employed over the closed lids for five to fifteen minutes, thrice weekly.

Any accommodative, muscular, or refractive anomaly should be corrected (Theobald.)

Epithelioma Conjunctivæ.—Gr. ἐπί on + θηλή nipple + -ωμα tumor. See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

Esophoria or Latent Convergence.—Gr. ἔσω inward + φέρειν to bear; L. *látens*, hidden; *con*, together + *verg'ere*, to incline. See Muscular Anomalies.

Eversion of the Eyelid.—L. *ever'sio*, a turning outward. See Ectropion.

Examination of the Eye.—See the Appendix, following Part 6.

Exophoria or Latent Divergence.—Gr. ἔξω out + φέρειν to bear; L. *látens*, hidden; *dis*, apart + *verg'ere*, to incline. See Muscular Anomalies.

Exophthalmos.—Gr. ἐξ out + ὀφθαλμός eye. Abnormal protrusion of the eyeball.

Causes.—Hyperthyroidism (exophthalmic goitre); acromegaly; brain tumors; hydrocephalus; oxycephaly (tower or steeple head); panophthalmitis purulenta (*q.v.*); orbital cellulitis (*q.v.*); tumors of the eyeball; orbital tumors (*q.v.*); orbital cephalocele; orbital meningocele; traumatic or spontaneous communication between the carotid artery and cavernous sinus (arteriovenous aneurysm); aneurysm of the internal carotid; aneurysm of the ophthalmic artery; orbital hæmatoma; polypi from the nose or accessory sinuses.

Pulsating exophthalmos is usually due to traumatic, rarely to spontaneous rupture of the carotid artery into the cavernous sinus; very rarely to aneurysm of the internal carotid or ophthalmic artery or to intracranial affections.

Treatment.—This depends, of course, upon the cause (*q.v.*, in its alphabetical place). Ligation of one or both of the common carotids, or of the dilated, pulsating orbital veins, may cure a pulsating exophthalmos.

Exostosis, Orbital.—Gr. ἐξ out + ὀστέον bone. See Orbital Tumors.

Eye, Amaurotic Cat's.—See Amaurotic Cat's-Eye.

Eyeball, Contusion of the.—L. *contusio*, bruise. See Injuries of the Eye.

Injuries of the.—See Injuries of the Eye.

Penetrating Wounds of the.—L. *pen'e-trans*. See Injuries of the Eye.

Protrusion of the.—See Exophthalmos.

Eye, Black.—See Black Eye.

Burns of the.—See Injuries of the Eye.

Cat's.—See Amaurotic Cat's-Eye.

Cross—See Squint.

Foreign Bodies in the.—See Foreign Bodies in the Eye.

Hot.—See Episcleritis.

Injuries.—See Injuries of the Eye.

Eye, Pink.—See Conjunctivitis Catarrhalis.

Strain—See Asthenopia.

Traumatism—Gr. τραῦμα, wound. See Injuries of the Eye.

Wounds.—See Injuries of the Eye.

Eyelid, Abscess of the.—L. *abscessus*, a going apart. See Hordeolum.

Adherent to the Eyeball.—See Symblepharon.

Dermatolysis of the.—Gr. δέρμα skin + λύσις loosening. See Blepharochalasis.

Drooping of the Upper.—See Ptosis.

Eczema of the.—See Eczema of the Lids.

Eversion of the.—L. *ever'sio*, a turning outward. See Ectropion.

Granular.—L. *gran'ulum*, grain. See Conjunctivitis Trachomatosa.

Inversion of the.—L. *in*, into + *ver'tere*, to turn. See Entropion.

Œdema of the.—See Œdema of the Lids.

Spasm of the.—See Blepharospasm.

Eyes, Cross.—See Squint.

Eye-Strain.—See Asthenopia.

Facial Paralysis.—L. *fac'ies*, face; Gr. παρά beside + λυέιν to loosen. Paralysis of the orbicularis muscle, due to facial nerve paralysis, causes lagophthalmos (*q.v.*), epiphora, conjunctivitis, and sometimes keratitis e lagophthalmo. See Part 1, General Medicine and Surgery,

Family Idiocy, Amaurotic.—See Amaurotic Family Idiocy, in Part 1.

Far-Sightedness. — See Accommodation Anomalies and Hypermetropia.

Fibroma Conjunctivæ.—L. *fi'bra*, fibre + Gr. -ωμα tumor. See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

Fields of Vision.—See the Ocular Examination in the Appendix following Part 6.

Fistula of the Cornea.—L. *fis'tula*, pipe. See under Keratitis Ulcerosa.

Lachrymal Gland.—L. *fis'tula*, pipe; *lac'rima*, tear; *glans*, a cord.

Etiology.—Congenital anomaly; traumatism; dacryo-adenitis; carious upper canine tooth.

Treatment—Connect the fistula with the conjunctival sac by Bowman's operation. Insert a threaded needle a short distance into the fistula, and bring it out on the conjunctival surface of the lid by passing it through the latter. Now pass a second needle attached to the other end of the thread through the lid at a point close to the orifice of the fistula, tie the two ends tightly, and leave the thread to cut its way out. Freshen the edges of the external fistula in order to hasten its closure. (From Theobald.)

Follicular Conjunctivitis.—See Conjunctivitis Follicularis.

Foreign Bodies in the Eye.—A foreign body that is producing symptoms is either beneath the upper lid or upon the cornea, rarely within the eyeball.

To remove a foreign body from beneath the upper lid, direct the patient to look strongly down, then grasp the eyelashes with the fingers of the left hand, pull the lid downward and away from the eyeball, and with a rounded, smooth instrument, such as a crochet-needle or pen-holder or wooden toothpick used as a fulcrum against the tarsal cartilage, evert the lid. Remove the body with a cotton-covered toothpick.

To remove a foreign body from the cornea first anæsthetize the eye by means of a 5 per cent. solution of cocaine, holocaine, or alypin; then carefully lift out or scrape away the body with a boiled wooden toothpick, spud, or knife. Then flood the eye with sterile boric acid solution, 3 per cent. If a keratitis is present, instil atropine (see Keratitis).

To remove a foreign body that has passed through and lies beneath the conjunctiva, lift the body with forceps, and snip off the part. Grains of powder may be removed in this way, or by electrolysis, or they may be allowed to remain.

A foreign body within the eyeball, if not removed, will cause a destructive inflammation of the eye, and probably sympathetic inflammation of the other eye (*q.v.*). The diagnosis is made from the history, by means of oblique illumination (*q.v.*) ophthalmoscopy, the electro-magnet, the X-ray, or the resulting symptoms of irritation and inflammation. The body should be removed, if possible, and the eye treated with atropine, etc., as described under Iritis. If the body can not be removed, do not delay over two or three weeks in removing the eye, if the inflammatory symptoms do not improve within that time, because of the danger of sympathetic ophthalmia developing in the other eye.

Fourth Nerve Paralysis.—L. *ner'vus*; Gr, παρά beside + λύειν to loosen. See Muscular Anomalies.

Fugaceous Periodic Episcleritis. — See Episcleritis.

Glaucoma.—Gr. γλαυκός green. Abnormal increase in the intra-ocular tension, as determined by pressure with the fingers through the upper lid with the eye looking downward, or by means of the tonometer. Use the index fingers of both hands and make alternate pressure first with one finger then the other. The usual upper limit of

normal is 25 millimetres. The condition is seldom met with below the age of thirty years.

Three varieties of glaucoma are distinguished, viz., (1) primary inflammatory glaucoma; (2) primary non-inflammatory or simple glaucoma; and (3) secondary glaucoma. These three varieties will be considered in the order named.

(1) Glaucoma Inflammatorium; Glaucoma with Exacerbations.—This form of glaucoma is characterized by periodic, more or less frequent, increasingly severe attacks of pain, obscuration of vision (contraction of the field beginning on the nasal side), and the appearance of a rainbow halo about a flame, associated with pericorneal and general conjunctival injection, dilatation of the pupil, steaminess and anæsthesia of the cornea, a shallow anterior chamber, and increased intra-ocular tension. The attacks last at first usually several hours. In the intervals between attacks, ophthalmoscopic examination reveals cupping of the optic disc.

Etiology.—(a) Predisposing Causes: Eye-strain with resulting choroido-retinitis; rheumatism; gout; arteriosclerosis; chronic constipation; chronic bronchitis; feeble heart action producing venous congestion; the menopause; syphilis, influenza, and other febrile diseases; heredity.

(b) Exciting Causes: Emotion; exposure to inclement weather; trauma; insomnia; late hours; a hearty meal; neuralgia of the fifth nerve; use of a mydriatic.

Treatment.—In severe cases, the sight may be destroyed in forty-eight to twenty-four hours, therefore the necessity for prompt treatment. Instil a solution of eserin sulphate or pilocarpine hydrochlorate, gr. iv to the ounce of distilled water, one or two drops every hour or two, or three or four times in the twenty-four hours, until the pupil is well contracted and relief is obtained. The additional use of dionin, 5 per cent., one drop in the eye, t.i.d., is of service. Apply hot fomentations of opium to the lids:

℞ Extracti opii ..... gr. x
Acidi borici ..... gr. xl
Aquæ ..... ℥iv
(Theobald.)

Six to ten leeches may be applied to the temple.

Give at once an energetic mercurial purge, *e.g.*, calomel, gr. ii–viii, followed by a saline (Part 11). Sodium salicylate, aspirin, phenacetin, antipyrine, or morphine (see Drugs, Part 11), may be prescribed for the relief of pain.

If the above measures are not followed by prompt relief, perform a broad superior iridectomy, extending to the ciliary margin through a scleral incision. If iridectomy fails, and the sight is lost, perform enucleation (*q.v.*) to save the other eye.

Even should the use of myotics prove effectual, an iridectomy should be performed as early as possible, in order to ensure a permanent cure.

To prevent the development of glaucoma in the other eye, correct any refractive accommodative, or muscular anomalies present, and enjoin the observance of correct hygiene, *e.g.*, adequate rest and daily exercise, frequent bathing, fresh air day and night, adequate dry, warm clothing, regular hours of eating and sleeping, rest before and after meals, free bowel activity (a morning saline, if need be, such as sodium phosphate, or Carlsbad salts), temperance in eating, and the avoidance of mental stress. Employ eserin upon the first appearance of symptoms; and in the latter event do an early iridectomy.

(2) Glaucoma Simplex.—A chronic, non-inflammatory affection of elderly people, characterized by a gradual, bilateral failure of vision (contraction of the field beginning on the nasal side), slight increase of intra-ocular tension, and cupping of the optic disc, which is surrounded with a halo-like ring. The condition occurs usually in those past forty-five years of age; but it is sometimes met with in young people. It should be distinguished from optic atrophy (*q.v.*).

Etiology.—Gout, rheumatism, arteriosclerosis, influenza, etc., may be causative.

Treatment.—Prescribe eserin sulphate, gr. $\frac{1}{8}$ to $\frac{1}{4}$ to the ounce of sterile, distilled water, or pilocarpine hydrochlorate, gr. $\frac{1}{5}$ to the ounce of sterile distilled water, freshly prepared, one drop in each eye, two to four times a day. The strength of the pilocarpine solution may be gradually increased in three years to about six grains to the ounce (De Schweinitz). Before each instillation the eye should be irrigated freely with boric acid solution, 3 per cent., and the eyeball massaged through the closed lids.

Correct any refractive, accommodative, or muscular anomaly that may be present, attend to any other possible etiological influence, and enjoin the observance of correct hygiene, *e.g.*, adequate rest and daily exercise, frequent bathing, fresh air day and night, adequate dry, warm clothing, regular hours of eating and sleeping, rest before and after meals, free bowel activity, temperance in eating, and the avoidance of mental stress. Potassium iodide (Part 11) may be tried.

The employment of myotics should be persisted in for the remainder of life, or as long as the intra-ocular pressure is controlled; but should the pressure rise, as shown by the tonometer, or the visual field and central vision decline, an iridectomy should be performed. It is rarely unsuccessful in checking the progress of the disease, and rarely harmful, but it can not be expected to improve the vision, although it may.

(Hydrophthalmos or buphthalmus or ox eye is an unnaturally big eye, with usually increased tension, occurring congenitally or in the first year of life, heredity being an important factor. It may spontaneously cease to increase or it may increase and total blindness result. An iridectomy is indicated.)

(3) **Secondary Glaucoma.**—Increased intra-ocular tension consequent upon other disease of the eye, viz., corneal staphyloma, scleral staphyloma, uveitis, seclusio pupillæ, or adherence of the iris to the lens at the pupillary margin, lens injuries causing swelling or dislocation, cataract extraction or discission with resulting prolapse of the iris, etc., intra-ocular tumors, retinal hemorrhage, detachment of the retina, choroido-retinitis, high myopia, penetrating and contused wounds, ulcerative diseases, neglected iritis, cataract formation.

Treatment.—Attend to the cause (*q.v.*, in its alphabetical place). Combat the increase of tension by means of myotics and dionin, and if necessary, by paracentesis of the cornea, (applicable in transient cases of increased tension, as in swelling of the lens and serous iritis [Fuchs]), or iridectomy.

Glioma of the Retina.—Gr. γλία glue + -ωμα tumor. A malignant sarcomatous growth affecting the neuroglial or connective tissue of the retina, occurring congenitally or in early childhood, usually within the first three to five years, and manifested by impairment of vision and slight enlargement and sluggishness of the pupil, which presents a yellow-white reflex (amaurotic cat's-eye, *q.v.*). An ophthalmoscopic examination should be made.

Swelling and pain soon occur, the eyeball ruptures, and the tumor appears externally. Unless promptly eradicated the disease is fatal in several years. Metastases occur very early.

Treatment.—Enucleate the eye at once, and divide the optic nerve as far back as possible. If the orbit is invaded, remove its whole contents. After enucleation or orbital exenteration, employ the X-rays or radium (*q.v.* in Part 1) to destroy any remaining tumor cells.

Gonorrhœal Ophthalmia.—Gr. ὀφθαλμός eye. See Conjunctivitis Gonorrhœica.

Granular Lids.—L. *granúlum*, grain. See Conjunctivitis Trachomatosa.

Gumma, Orbital.—L., gummy tumor. See Orbital Tumors.

Hæmangioma Conjunctivæ.—Gr. αἷμα blood + ἀγγεῖον vessel + -ωμα tumor. See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

Hæmatoma, Orbital.—Gr. αἷμα blood + -ωμα tumor. See Orbital Tumors.

Hemeralopia; Day Blindness.—Gr. ἡμέρα day + ἀλαός blind + ὤψ eye. Improvement of vision when the illumination is diminished.

Etiology.—Central opacities in the cornea, pupil, or lens; central scotoma, particularly in tobacco amblyopia.

Hemianopia.—Gr. ἡμι- half + ἀν priv. + ὄψις vision. See Optic Chiasma, Tract, and Centres.

Hemorrhage into the Retina.—Gr. αἷμα blood + ῥηγνύναι to burst forth. See under Retinitis.

Hemorrhage into the Vitreous.—L. *vit'reus*, glassy. Impairment of vision occurs and continues until the hemorrhage is absorbed. Ophthalmoscopic examination reveals a black or reddish-black or misty-red reflex, or "ill-defined, opaque masses."

Etiology.—Trauma; choroidal or retinal disease; arteriosclerosis; gout; diabetes; nephritis; anæmia; hæmophilia; delayed menstruation; myopia; glaucoma.

Treatment.—Enjoin rest of the eyes and body, open the bowels, and prescribe potassium iodide.

℞ Solutionis potassii iodidi concentrati, ℥ss (gr. i to each min.)

Sig.—Minims five to ten, well diluted in milk or water, t.i.d.

Mercury and pilocarpine (see Part 11) also serve to promote absorption, as well as subconjunctival injections of salt solution every two or three days, increasing the strength from 2 to 5 per cent., and the quantity from 15 to 25 minims.

Attend to the cause.

Herpes Febrilis Corneæ.—Gr. ἕρπης blister; L. *feb'ris*, fever. See Keratitis Neuropathica.

Zoster Ophthalmicus.—Gr. ζωστήρ girdle; ὀφθαλμός eye. See Keratitis Neuropathica.

Heterophoria, or Latent Squint.—Gr. ἕτερος other + φορός bearing; L. *lat'ens*, hidden. See Muscular Anomalies.

Heterotropia, or Manifest Squint.—Gr. ἕτερος other + τρόπος turn. See Muscular Anomalies.

Hordeolum; Stye.—L. *horde'olum*, barleycorn. Acute, localized inflammation of a ciliary sebaceous gland, at the edge of the lid (hordeolum externum), or a Meibomian gland, at the posterior surface of the lid (hordeolum internum). The disease tends to recur.

Etiology. — Eye-strain (*q.v.*); blepharitis marginalis (*q.v.*); poor health (anæmia, tuberculosis, etc.); habitual constipation.

Treatment.—Attend to the cause. Enjoin adequate rest and exercise, fresh air day and night, a daily morning warm bath in a warm room, before breakfast, followed by a cool spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, an abundance of wholesome food, rest before and after eating, and regulation of the bowels. Prescribe a tonic, *e.g.*, iron, strychnine, codliver oil, or arsenic (see Drugs, Part 11). The elixir ferri, quininæ, et strychninæ phosphati is a good tonic.

As an abortive measure, one may extract the eyelash with epilation forceps, and apply every half hour, on a "few fibres of absorbent cotton" (Theobald), a solution of zinc sulphate, gr. xxx to the ounce, taking care not to get any in the eye; or one may apply:

℞ Hydrargyri oxidi flavi..... gr. iiss
Adipis lanæ hydrosi..... ʒi
Petrolati mollis..... ʒi

or paint the lid margin with collodion; or puncture the affected follicle with a sharp toothpick dipped in pure carbolic acid.

If abortive treatment is not feasible, apply hot boric acid compresses, and as soon as pus appears, make an incision parallel to the lid margin. Continue the hot applications, and after the pain and discharge have ceased, apply yellow oxide of mercury ointment in order to prevent the development of other styes.

Hot Eye.—See Episcleritis.

Hydatid Cyst, Orbital.—Gr. ὑδατίς; κύστις bladder. See Orbital Tumors.

Hydrophthalmos.—Gr. ὕδωρ water + ὀφθαλμός eye. See under Glaucoma.

Hyperæmia of the Conjunctiva.—See Conjunctival Hyperæmia.

Hypermetropia.—Gr. ὑπέρ over + μέτρον measure + ὤψ eye; far-sightedness; the focussing of parallel rays behind the retina See Refraction Anomalies.

Hyperopia.—Gr. ὑπέρ over + ὤψ eye. See Hypermetropia, under Refraction Anomalies.

Hyperostosis, Orbital.—Gr. ὑπέρ over + ὀστέον bone. See Orbital Tumors.

Hyperphoria.—Gr. ὑπέρ over + φορός bearing or tending; the elevation of the visual axis of one eye above that of the other. See Muscular Anomalies.

Hypertrophy of the Lachrymal Gland.—Gr. ὑπέρ over + τροφή nutrition. See Orbital Tumors.

Hypopyon.—Gr. ὑπό under + πύον pus: an accumulation of a purulent exudate at the bottom of the anterior chamber. See Iritis, and Keratitis Ulcerosa.

Idiocy, Amaurotic Family.—See Amaurotic Family Idiocy in Part 1.

Illumination, Oblique.—See Oblique Illumination.

Imbalance of the Eye Muscles.—L. *in*, not + *bil'anx*, balance. See Muscular Anomalies.

Inequality of the Pupils.—See Anisocoria.

Inferior Oblique, Paralysis of the.—L. *infe'rior*, lower; *obliq'uus*, oblique; Gr. παρά beside + λύειν to loosen. See Muscular Anomalies.

Injuries of the Eye.—**A. Conjunctival and Corneal Injuries.**—First anæsthetize the eye with cocaine solution, 4 per cent., two or three drops every three minutes; then remove all foreign material by means of forceps or pledgets of cotton and copious irrigation with warm boiled boric acid solution, 3 per cent. (ʒiv ad Oi), or normal saline solution (ʒi ad Oi), or mercury bichloride or oxycyanate, 1 : 10,000. Cleanse the skin of the lid and adjacent field by gently washing with soap and water, followed by benzene (Lloyd Mills). Continue the boric acid irrigations three or four times a day, or oftener, until healing occurs. For pain and swelling, apply Theobald's opium and boric acid lotion to the closed lids:

℞ Extracti opii..... gr. x
Acidi borici..... gr. xl
Aquæ..... ʒiv

In corneal injuries, with photophobia and lachrymation, instil atropine, gr. i–iv to the ounce, or holocaine hydrochlorate, gr. i–ii to the ounce, one or two drops several times a day, for the purpose of keeping the pupil dilated. Holocaine is useful for its anæsthetic properties, and it is also antiseptic. Dionin, in 5 per cent. solution, one drop three or four times a day, is an analgesic and lymphagogue, and favors healing. Tinted glasses should be worn.

If the wound is infected, cauterize it carefully with pure carbolic acid by means of a sharp-pointed, wooden toothpick wound with a few fibres of absorbent cotton, after

having first anæsthetized the eye with cocaine solution, 5 per cent. Follow the cauterization after a few moments with boric acid irrigation. The cauterization may be repeated after twenty-four hours, if required. Bichloride of mercury, 1 : 10,000, cyanide of mercury, 1 : 2000, and chlorine water, full strength and freshly prepared (see Part 11) are of service in infected cases (see also Keratitis Ulcerosa).

In simple corneal erosion, bandage the eye (Duane advises both eyes bandaged) night and day for one or two weeks, or until the epithelium is regenerated. Sometimes the erosion recurs weeks or months after it has healed, due probably to "lack of firm adhesion of the regenerated epithelium to its bed" (Fuchs). To prevent recurrence, Fuchs advises massage of the cornea through the lids, with yellow oxide of mercury ointment (gr. i ad ʒi), "for some time" after the erosion has healed. "For pain which recurs at night," he advises the introduction into the conjunctival sac, before retiring, of "some fatty substance, *e.g.*, boric acid ointment" (Part 11), and great caution in opening the eyelids if the patient should happen to awake during the night. If relapses occur in spite of the above measures, he advises that the loosely adherent epithelium be scraped off and the denuded area painted with tincture of iodine.

B. Burns.—Neutralize acid burns with sodium bicarbonate solution, ʒi ad Oi, and alkaline burns with hydrochloric acid, 1 : 2000, or acetic acid, gtt. xx of the dilute acid to one ounce of water. Remove all foreign material by means of forceps or pledgets of cotton and copiously irrigate with boric acid or normal saline solution, ʒi ad Oi. Then instil the following collyrium:

℞ Atropinæ ..... gr. iv
Olei ricini ..... ʒi

Apply iced cloths continuously until the burning pain ceases, and irrigate the eye frequently with boric acid solution. Guard against adhesions between the eyeball and the lids by the free use of vaseline, or by means of pledgets of cotton soaked in castor-oil, and by repeatedly drawing the lids away from the eyeball.

Permanent opacities are apt to follow lime burns due to the deposition of calcium carbonate. To clear the cornea in these cases, Zur Nedden advises bathing the eye, after cocainization, "several times a day for half an hour at a time in a ten per cent. solution of neutral ammonium tartrate." (Fuchs.)

C. Penetrating Wounds of the Eyeball.—Cleanse the eye with bichloride or oxycyanate of mercury, 1 : 10,000. Use the X-ray (Sweet's apparatus) or the ophthalmoscope to locate foreign bodies, which should be removed, if possible. The electro-magnet may prove useful in the extraction of magnetizable bodies (see Foreign bodies). Remove or replace displaced structures. If the iris prolapses, draw the prolapsed portion forward as far as possible with forceps, after freeing it from the wound margin, and cut it off flush with the surface. Close gaping wounds, whether of the cornea or conjunctiva, with fine silk sutures or with conjunctival flaps. After five or six days the flaps may be allowed to slip back by cutting the stays. Close scleral wounds with conjunctival sutures. Instil atropine, gr. iv ad ʒi (or eserine, gr. iv ad ʒi, if the intraocular tension is increased), put the patient to bed, apply moderate compression with a bandage over gauze and cotton, and enjoin absolute rest, the avoidance of straining at stool, etc. (see also Staphyloma). Partial detachment of the iris at its periphery (iridodialysis) calls for atropine. Inject anti-tetanus serum in military wounds. See Dislocation of the Lens, for this complication.

Should cyclitis develop, manifested by ciliary pain and sensitiveness, photophobia, lachrymation, pericorneal congestion and hyperæmia of the iris, or should vision gradually decline, or the eye become gradually soft, perform enucleation or evisceration (*q.v.*) at once, in order to avoid the occurrence of sympathetic ophthalmitis (*q.v.*) in the other eye. In severe destructive injuries remove the eye promptly for the same reason. Sympathetic ophthalmia, however, does not develop earlier than ten to fourteen days, and rarely before three weeks, so that one has at least a week to decide the fate of the injured eye.

D. Contusion of the Eyeball.—The pupil is dilated and inactive.

Put the patient to bed. Shade the eyes, apply cold compresses and instil a solution of pilocarpine hydrochloride or eserine sulphate or salicylate, gr. iv to the ounce of distilled water, one or two drops three or four times a day, until the pupil is well contracted. Eserine may produce a feeling of great tension in the eye, with headache and nausea, so that pilocarpine, although less effectual as a myotic, had better be tried first.

Insufficiency, Muscular, Latent.—L. in, not + *sufficiens*, sufficient; *musculus*, muscle; *lat'ens*, hidden. See Muscular Anomalies.

Insufficiency, Manifest.—See Muscular Anomalies.

Internal Rectus, Paralysis of the.—L. *iṅter'nus*; *rect'us*, straight; Gr. παρά beside + λύειν to loosen. See Muscular Anomalies.

Interstitial Keratitis.—See Keratitis Interstitialis.

Inversion of the Eyelid.—L. *in*, into + *vert'ere*, to turn. See Entropion.

Ionic Medication.—See Part 1, General Medicine and Surgery.

Irido-Choroiditis, Non-Suppurative.—See Iritis.

Suppurative.—L. *sub*, under + *pus, pur'is*, pus. See Panophthalmitis Purulenta.

Irido-Cyclitis.—See Iritis.

Iridodialysis.—Gr. ἶρις iris + διά through + λύειν to loosen: separation of the iris from its attachment. See Penetrating Wounds of the Eyeball, under Injuries of the Eye.

Iris, Detachment of the.—Gr. ἶρις iris. (See Penetrating Wounds of the Eyeball, under Injuries of the Eye.

Inflammation of the.—L. *inflamma're*, to set on fire. See Iritis.

Prolapse of the.—L. *pro*, before + *lab'i*, to fall. See Penetrating Wounds of the Eyeball, under Injuries of the Eye; and Keratitis Ulcerosa.

Iritis.—Gr. ἶρις iris + -ιτις inflammation. Iritis (usually irido-cyclitis) is either acute or chronic. Acute iritis is manifested by pain (sometimes absent), photophobia, lachrymation, a fine, pinkish, pericorneal, subconjunctival injection (ciliary), a contracted sluggish or immobile, irregular pupil (due to adhesions, and brought out by dilating with atropine, gr. ss–i, or homatropine, gr. iv, or euphthalmine, gr. iii, to the ounce), swelling, change of color, and dull, lustreless appearance of the iris, and in severe cases, grayish opacity of the pupil due to exudate upon the anterior capsule of the lens and to turbidity of the aqueous. Hypopyon (*q.v.*) may occur. Tenderness in the ciliary region is an indication of cyclitis. The disease runs a course of four weeks or longer. Chronic iritis (irido-cyclitis and irido-choroiditis or uveitis) is characterized by few or no symptoms of inflammation, but by defective vision due to synechiæ and a pupillary membrane, deposits upon the posterior surface of the cornea (keratitis punctata), and opacities in the vitreous (so-called "serous iritis," a confusing term which should be dropped). Chronic iritis may last for years.

Etiology.—Septic or toxic states, *e.g.*, syphilis, tuberculosis, gonorrhœa, acute infectious diseases, pyorrhœa alveolaris, alveolar abscess, tonsillitis, naso-pharyngitis, sinusitis, otitis media, bronchitis, gastro-intestinal intoxication, pelvic disease, menstrual disorders, prostatitis, anæmia, cachexia, diabetes, gout, "rheumatism," arthritis deformans, etc.; keratitis or other ocular disease; traumatism; trophic nerve disturbances, as in reflex dental and uterine irritation, herpes zoster ophthalmicus, post-malarial iritis, sympathetic iritis due to uveitis in the other eye, etc.

According to Theobald, syphilis is the cause in about 50 per cent. of the cases, "rheumatism," (probably focal infection), in about 25 per cent.

Prognosis.—Iritis is almost always amenable to early treatment. Trophic iritis is rather intractable. Sympathetic iritis or uveitis (*q.v.*) usually leads to destruction of the eye, even though the offending fellow eye is removed. Relapses are frequent in syphilitic, rheumatic, and gouty cases. Untoward sequelæ include closure of the pupil by an organized membrane (occlusio pupillæ), adherence of the iris to the lens at the pupillary margin (seclusio pupillæ), adherence of the iris to the lens throughout its entire extent, and sympathetic inflammation of the other eye (*q.v.*).

Treatment.—Attend to the cause (*q.v.* in its alphabetical place and appropriate part). Administer, at the outset, an active calomel purge, gr. ii–viii, followed by a saline (Part 11), confine the patient to bed on light diet, excluding alcohol and condiments, in acute cases, protect both eyes against the light by smoked glasses (No. 2 London smoke), and prescribe aspirin phenacetin, antipyrine, codeine, or morphine for the relief of pain (see Drugs, Part 11).

Treat the condition locally as follows. Keep the pupil well dilated by means of atropine:

℞ Atropinæ sulphatis..... gr. iv
Acidi borici..... gr. x
Aquæ destillatæ..... ℥i

M. Sig.—Drop into the eye four to six times daily at first, and later only often enough to keep the pupil dilated.

If it is desired to break up recent pupillary adhesions, the atropine may be employed every hour or half-hour (Theobald). Look out for toxic constitutional symptoms, *e.g.*, flushing of the face, dryness of the throat, acceleration of the pulse, nausea, mental excitement, tremor, motor incoördination, and finally unconsciousness (combat these effects with morphine hypodermically, and

the free administration of water. Atropine may also cause conjunctival catarrh. In cyclitis or uveitis it should be used with care for fear of glaucoma (*q.v.*). Should the tension become elevated, the atropine should, of course, be discontinued, and if necessary, pilocarpine or eserine, gr. iv to the ounce of distilled water instilled. Atropine should be suspended whenever it produces an increase of pain. If atropine does not produce mydriasis, or if it causes conjunctivitis, substitute scopolamine (hyoscine) hydrobromide or duboisine sulphate, gr. ii to the ounce, three or four times daily (look out for constitutional effects: see Part 11), or euphthalmine, 2 per cent., or eumydrin, 1 per cent., or homatropine hydrobromide, 1 per cent.

Dionin, 5 per cent. solution, one drop in the eye three times a day, is advantageously used in conjunction with atropine. It is an analgesic and lymphagogue, and promotes healing.

For the relief of pain in severe cases, apply to the closed lids for thirty minutes, several times a day, very hot compresses wet with water or with ext. opii or ext. belladonnæ, gr. xv., in water, ℥iv. For nocturnal pains a blister (cantharidal collodion or cerate: see Part 11) may be applied above the brow and to the temple, "about noon, so that full vesication is obtained about 7 P. M." (Wood and Woodruff). The application to the temple of from three to ten leeches, or a Heurteloup artificial leech, is also useful in diminishing the inflammatory symptoms.

Subconjunctival injections of normal salt solution, 0.6 to 0.9 per cent., or bichloride of mercury, 1: 5000, or cyanide of mercury, 1:3000 to 1500 ♏xxv, are "exceedingly valuable," says De Schweinitz. Novocaine, gr. ⅓, may be added to render the injection almost painless (Melville Black).

General measures for the purpose of combating the inflammation and promoting the absorption of exudate, no matter what may be the cause of the iritis, are (1) energetic diaphoresis, practiced every day or every other day, by means of sodium salicylate or aspirin, gr. xx, dissolved in hot linden flower or elder tea or lemonade, with the patient well wrapped in blankets; or by means of pilocarpine, gr. ⅙ to ¼, every other night; or a hot bath followed by woolen blankets; or hot bricks covered with wet cloths sprinkled with alcohol; and (2) mercury, by mouth or inunction, and potassium iodide (see Drugs, Part 11). Donovan's solution (*q.v.*) is useful.

In purulent ophthalmitis, the eye should be promptly removed. See Enucleation.

In occlusio or seclusio pupillæ, perform a broad peripheral iridectomy, and extract the lens if it is opaque.

Keratitis Bullosa.—Gr. *κέρας* horn + *-ιτις* inflammation; L. *bul'la*, blister. See Keratitis Vesiculosa.

Dendritica.—Gr. *δένδρον* tree. See Keratitis Neuropathica and Keratitis Ulcerosa.

Interstitialis seu Parenchymatosa.—L. *ĭnter*, between + *sĭstere*, to set; Gr. *παρέγχυμα*. A chronic inflammatory affection of the substantia propria of the cornea, occurring usually in young people, characterized by a "ground-glass" appearance of the cornea, a fine, pinkish, pericorneal, subconjunctival injection (ciliary), pain, photophobia, lachrymation, and blepharospasm. Uveitis is almost always present.

The disease may persist for many months, but the ultimate prognosis is usually good, and the opacities clear up. Relapses are frequent.

Etiology.—In young people: inherited syphilis; rarely tuberculosis; possibly, but rarely rickets; malaria; myxœdema; poor nutrition.

In those above thirty: gout; rheumatism; tuberculosis; the climacterium; syphilis.

Treatment.—

℞ Atropinæ ..... gr. iv
Acidi borici ..... gr. x
Aquæ destillatæ ..... ℥i

M. Sig.—Instil one or two drops, three or four times a day, or often enough to keep the pupil well dilated.

Smoke-tinted glasses should be worn, and the near use of the eyes prohibited.

After the photophobia has subsided, and mydriasis is established, use the atropine twice daily. Dionin, 5 per cent., one drop in the eye, t.i.d., "is of distinct service" (De Schweinitz). Apply hot fomentations to the closed lids for fifteen minutes, three times a day or oftener, until the pain and irritation subside.

℞ Extracti opii ..... gr. x
Acidi borici ..... gr. xl
Aquæ ..... ℥iv

M. Sig.—Apply to the closed lids for the relief of pain. (Theobald.)

If atropine sets up a conjunctivitis, substitute scopolamine (hyoscine) hydrobromide or duboisine sulphate, gr. ii to the ounce (look out for constitutional effects, see Part 11), or euphthalmine, 2 per cent., or eumydrin, 1 per cent., or homatropine, 1 per cent.

Should the intraocular tension become elevated, discontinue the use of myotics, and if necessary, use pilocarpine or eserine, gr. iv to the ounce of distilled water. An iridectomy is rarely required. Subconjunctival injections of cyanide of mercury, 1 : 4000, 10 to 20 minims, may be of value.

Open the bowels at the outset with calomel, prescribe fresh air, a nutritious diet, (excluding condiments, spices, and alcohol), tonics such as iron, arsenic and codliver oil, (see Part 11), and otherwise treat the patient according to the cause, which is usually syphilis.

After all symptoms of irritation have disappeared, have the patient practice systematic, gentle massage of the cornea through the eyelid, after the introduction of ung. oxidi flavi, gr. i ad ʒi of vaseline or cosmoline or liquid albolene, into the conjunctival sac, with the object of hastening the absorption of opacities (*q.v.*, for additional treatment).

After healing has occurred, glasses are usually required for the correction of corneal astigmatism produced by the inflammation.

Keratitis Neuroparalytica.—Gr. *νεῦρον* nerve; *παρά* beside; *λύειν* to loosen. (See Keratitis Neuropathica, below.)

Neuropathica.—Gr. *νεῦρον* nerve + *πάθος* disease. Corneal ulceration, perhaps preceded by vesiculation, due to a disturbance of the corneal nerve supply, *i.e.*, the trigeminal nerve, Gasserian ganglion, or ophthalmic ganglion. Under the above caption are included keratitis neuro-paralytica, due to paralysis of the fifth nerve, herpes zoster ophthalmicus, due to a lesion of the Gasserian ganglion, herpes corneæ febrilis and keratitis dendritica, due to "cold," influenza, naso-pharyngitis, bronchitis, pneumonia, malaria, typhoid fever, whooping-cough, syphilis, rheumatism, gout, and reflex dental irritation. Keratitis dendritica is usually due to malaria. A non-neuropathic keratitis vesiculosa et bullosa occurs in irido-cyclitis, interstitial keratitis, and glaucoma.

Prognosis.—This is good, under treatment, in herpes febrilis; usually good in herpes zoster (a spontaneous cure usually occurring in two or three weeks, see Part 10); very serious in paralysis of the fifth nerve, in which the cornea is apt to be left densely opaque.

Treatment.—

℞ Atropinæ ..... gr. iv
Acidi borici ..... gr. x
Aquæ destillatæ ..... ʒi

M. Sig.—Instil one or two drops, three or four times a day at first, later twice a day, or often enough to keep the pupil well dilated.

In using atropine in herpes zoster one should bear in mind that this disease predisposes to glaucoma, so that the tension of the eyeball should be constantly observed.

Holocaine hydrochlorate, gr. i–ii to the ounce (analgesic and antiseptic), and dionin, 5 per cent. (lymphagogue), one drop in the eye three or four times a day, may be used in conjunction with atropine, the former during the stage of irritation. Dionin, says De Schweinitz, "is of signal service." Apply hot fomentations for the relief of pain, and keep the eyelids closed by means of a bandage. Aspirin, phenacetin, antipyrine, codeine, or morphine (see Part 11), may be required for the relief of pain. Every two or three hours irrigate the conjunctival sac with warm boric acid solution, 3 per cent., or bichloride of mercury, 1: 10,000, or cyanide of mercury, 1: 2000, or chlorine water freshly prepared and of full strength (see Part 11), or instil argyrol, 25 per cent., t.i.d. (See also Keratitis Ulcerosa for additional instructions.)

Give at the outset an energetic calomel purge, gr. ii–viii, followed by quinine, gr. iii, in capsule, four or five times a day, and strychnine, gr. 1/30 to 1/20, t.i.d. Potassium iodide, gr. v–x, well diluted, t.i.d.p.c. (see Part 11), is also recommended. Salicylate of sodium, says De Schweinitz, "is a most valuable remedy." Prescribe iron, or arsenic, if indicated, and also fresh air and nutritious food, excluding spices, condiments, and alcohol. For the skin eruption in herpes zoster, employ one of the following protective, anodyne, and antiseptic applications:

℞ Calaminæ,
Zinci oxidi, aa ..... ʒii
Acidi borici ..... ʒi
Glycerini ..... ♏xxx
Acidi carbolici ..... ♏xx–xxx
Liquoris calcis ..... ʒi
Aquæ, q.s., ad ..... ʒiv

M. Sig.—Shake well, and apply as often as required to obtain relief.

℞ Mentholis, (vel ac. carb., gr. x–xx) ..... gr. x–xl
Alcoholis ethylis ..... ʒiv

℞ Acidi carbolici vel thymolis ..... gr. x
Collodii flexilis ..... ʒii

℞ Zinci oxidi,
Acidi borici,
Talci, aa

℞ Mentholis ..... gr. xv–xx
Amyli ..... ʒi–ii
Unguenti zinci oxidi ..... ʒi
(Stelwagon.)

Keratitis Parenchymatosa.—See Keratitis Interstitialis.

Keratitis, Phlyctenulosa.—See Conjunctivitis Phlyctenulosa.

Punctata.—L. *punctum*, point. See Iritis.

Ulcerosa.—L. *ul'cus*, ulcer. Ulceration of the cornea is accompanied by a fine, pinkish, subconjunctival, pericorneal zone of injection, pain, photophobia, lachrymation, and blepharospasm. Hypopyon (*q.v.*) and iritis may occur. The ulcer may be outlined by staining (green) with the following dye: fluorescein, gr. viii, and liquor potassæ, ℥i, in distilled water up to ℥i, the excess to be washed off with water.

Corneal ulcers usually heal readily under treatment. Resulting opacities, however, if central, interfere seriously with vision.

Etiology.—Traumatism, due to a foreign body, misplaced cilia, burns, papillary growths on the free borders of the lids, etc., complicated by bacterial infection; any form of conjunctivitis; kerato-conjunctivitis, phlyctenular (*q.v.*); dacryocystitis; lagophthalmos (*q.v.*), causing desiccation of the cornea; lowered vitality, as after typhoid fever, influenza, measles, scarlet fever, smallpox, hepatic cirrhosis, hepatic carcinoma, etc.; senility; gastro-intestinal intoxication and other toxic and septic states, such as dental caries, naso-pharyngeal disease, gout, etc.; glaucoma; disturbances in the corneal nerve supply (see Keratitis Neuropathica); local tuberculosis (*q.v.*); ruptured vesicles (see Keratitis Vesiculosa et Bullosa); old cicatrices.

Treatment.—Attend to any possible etiological influence, remove foreign bodies, epilate misplaced cilia, remove papillary growths on the lid margins, etc. An energetic calomel purge, gr. ii–viii, should be given at the outset, followed by quinine, gr. iii, in capsule, four or five times a day (Theobald). Fresh air and nutritious food, excluding spices, condiments, and alcohol, are of importance, and tonics, such as iron or arsenic (Part 11), if indicated. Protective tinted glasses should be worn or the eye bandaged, as directed below:

℞ Atropinæ ..... gr. i–ii–iv
Acidi borici ..... gr. x
Aquæ bullientis ..... ℥i

M. Sig.—Instil one or two drops into the eye once or twice daily or often enough and in sufficient strength to keep the pupil well dilated, and to prevent photophobia, lachrymation, and blepharospasm.

Atropine sometimes sets up a marked conjunctivitis with œdema of the lids. If this should occur, substitute scopolamine (hyoscine) hydrobromide or duboisine sulphate, gr. ii to the ounce, or euphthalmine, 2 per cent., or eumydrin, 1 per cent., or homatropine, 1 per cent.

℞ Hydrargyri oxidi flavi ..... gr. i
Petrolati mollis ..... ℥i

M. Sig.—Apply with a wooden toothpick or camel's-hair brush in the morning after instilling the drops. (Theobald.)

℞ Unguenti iodoformi, 10 per cent. ..... ℥i

Sig.—Apply with a wooden toothpick or camel's-hair brush. Fine calomel or iodoform powder may be dusted on the ulcer, but not calomel if iodine is being taken internally, because of the local formation of mercury iodide.

Holocaine hydrochlorate (analgesic and antiseptic), gr. i–ii to the ounce, and dionin (lymphagogue and analgesic), 5 per cent., one drop three or four times a day, may be advantageously used in conjunction with the atropine. Subconjunctival injections of cyanide of mercury, 1 : 4000, 10 to 20 minims, are also recommended.

Every two or three hours the conjunctival sac should be flushed or irrigated with warm boric acid solution, 3 per cent., or bichloride of mercury, 1 : 10,000 to 8000, or cyanide of mercury, 1 : 2000, or chlorine water, freshly prepared and of full strength (see Part 11), or formaline, 1 : 10,000.

For the relief of pain, apply to the closed lids hot fomentations of water, or the following:

℞ Extracti opii ..... gr. x
Acidi borici ..... gr. xl
Aquæ ..... ℥iv
(Theobald.)

Spray the nasal passages frequently with Dobell's solution (Part 11) while treating corneal ulcer.

If the floor of the ulcer shows a tendency to bulge, employ moderate compression by means of a soft gauze and cotton pad and bandage, and keep the patient quiet in bed to avoid sudden perforation with prolapse of the iris. Caution the patient against straining at stool, coughing, etc., and prescribe if need be, laxatives for the former and sedatives for the latter.

In pronounced bulging, with threatened perforation, perform paracentesis through the floor of the ulcer, holding the needle flatwise, with the point well forward, so as to avoid wounding the lens. If a paracentesis needle with a shoulder is used, it is inserted at an angle of 45°.

If perforation occurs and the iris protrudes, one may try to replace it under cocaine anæsthesia (5 per cent. solution). If unsuccessful (and Fuchs says that attempts at permanent replacement are always unsuccessful), draw the prolapsed portion forward with forceps as far as possible, after freeing it from the wound

margin, and cut it off flush with the corneal surface.

In foul, spreading ulcers (ulcus serpens, due to the pneumococcus), one may curette the ulcer carefully, under cocaine anæsthesia, at the same time spraying the ulcer with boric acid solution, then apply, by means of a sharp-pointed wooden toothpick, wound with a few fibres of absorbent cotton, pure carbolic acid, or trichloracetic acid, or tincture of iodine, or formaline (1 : 60), or silver nitrate, gr. xx to the ounce, taking great care not to touch the healthy portions of the cornea. After a few moments, flush the cornea with normal saline solution (℥i ad Oi) or boric acid solution. If necessary, the cauterization may be repeated after twenty-four hours. If no improvement follows, one may employ, under cocainization, and with extreme care, the galvano-cautery or the end of a knitting-needle heated white hot. Prince's pasteurizer, however, had better be tried first. The point of the egg-shaped instrument is heated red-hot in the flame of an alcohol lamp, and is then held about three-sixteenths of an inch from the cocainized ulcer, while the lids are separated by the first and second fingers, and the patient directed to look so as to bring the ulcer into the middle of the palpebral aperture. To learn how close to approach the ball to the ulcer, it is well to approximate the heated end to the bulb of a thermometer. The temperature should not register more than 150° F. Of recent years, ethyl hydrocupreine or optochin (a quinine alkaloid), in 1 per cent. aqueous solution, every two hours, is advanced as a specific for ulcus serpens due to the pneumococcus.

If a corneal abscess is "extending laterally and shows no disposition to reach the surface," make a vent by means of the curette, and apply carbolic acid or the galvano-cautery. (Theobald.)

Ionic medication (*q.v.* in Part 1) is recommended for corneal ulcer. The cornea is cocainized. A fine tuft of cotton wool is placed on the end of a zinc rod which is then moistened with zinc sulphate solution, 1 per cent., and a current of 1 + milliampères is passed for two to three + minutes.

Should a corneal fistula occur, it is essential to healing to keep the tension in the anterior chamber low. To this end put the patient to bed, instil eserine or pilocarpine (see Glaucoma), and bandage both eyes lightly. If these measures fail, a conjunctival flap may be sewn over the fistula after scraping the latter; or the fistula may be excised by means of the corneal trephine and an equally large piece of healthy cornea implanted in the opening.

Keratitis Vesiculosa et Bullosa.—L. *vesic'ula*, a small sac or blister; *bul'la*, a large blister. Corneal vesicles occur in keratitis neuropathica (*q.v.*), and in iridocyclitis (see Iritis), interstitial keratitis (*q.v.*), phlyctenular keratoconjunctivitis (*q.v.*), and glaucoma (*q. v.*).

Keratoconjunctivitis.—See Conjunctivitis Phlyctenulosa.

Keratoconus; Conical Cornea.—Gr. *κέρας* horn + *κῶνος* cone; L. *co'nus*, cone; *cor'neus*, horny. A very rare anomaly. A high grade of myopia and astigmatism are produced, for which glasses should be prescribed. Duane points out the great usefulness, in selected cases, of discs with stenopœic holes or slits, their size and shape determined by careful experiment. The hydrodiascope (Gr. *ὕδωρ* water + *διά* through + *σκοπεῖν* to look) may also be of service.

If the condition is extreme, the apex of the cone should be cauterized with the galvano-cautery, using extreme care to avoid perforation; and this should be repeated several times until a sufficient flattening is produced. An iridectomy for a new pupil may then be required, and the corneal scar tattooed in order to lessen the dazzling.

Keratomalacia.—Gr. *κέρας* horn + *μαλακία* softening. Necrotic softening of the cornea, occurring usually in children debilitated by some exhausting disease, such as meningitis, smallpox, scarlet fever, measles, typhus fever, hereditary syphilis, and severe diarrhœa, or by insufficient or improper food. It is ushered in by night-blindness and conjunctival and corneal desiccation or xerosis, with scarcely any symptoms of irritation. In this early stage, careful treatment may possibly prevent the loss of sight, but the prognosis is usually extremely bad.

Treatment.—Apply hot fomentations to the lids, and instil, every two or three hours, a warm saturated solution of boric acid (4 per cent.), or freshly prepared chlorine water of full strength (see Part 11), together with the use of atropine in weak solution, gr. i–ii to the ounce. Keep the eyes closed by means of a bandage Administer concentrated liquid nourishment (milk, eggs, and beef juice), stimulants, and quinine (see Part 11) in liberal doses. (Theobald.)

Lachrymal Abscess.—L. *lacrima*, tear; *abscéssus*, a going apart. See Dacryocystitis.

Adenitis.—See Dacryoadenitis.

Calculus.—L. *calc'ulus,* pebble. See Epiphora.

Duct, Stricture of the.—L. *dúctus,* from *dúcere* to lead; *strictu'ra.* See Dacryocystitis.

Gland, Cyst of the.—L. *glans,* a cord; Gr. κύστις bladder. See Orbital Tumors.

Fistula of the.—See Fistula of the Lachrymal Gland.

Inflammation of the.—L. *inflammáre,* to set on fire. See Dacryoadenitis.

Hypertrophy of the.—Gr. ὑπέρ over + τροφή nutrition. See Orbital Tumors.

Puncta, Atresia of the.—L. *punctum,* point; Gr. α neg. + τρήσις a boring. See Epiphora.

Sac, Inflammation of the.—L. *sacćus,* bag; *inflammáre,* to set on fire. See Dacryocystitis.

Stone.—See Epiphora.

Lagophthalmos.—Gr. λαγώς hare + ὀφθαλμός eye. Inability to close the lids completely, resulting in chronic conjunctival catarrh and epiphora, and possibly keratitis, due to desiccation.

Etiology.—Congenital anomaly; notching of the border of the lid; ectropion (*q.v.*); paralysis of the orbicularis muscle, supplied by the seventh or facial nerve (*q.v.*); loss of tissue due to burns, ulcers, traumatism, or operations; staphyloma corneæ (*q.v.*); extreme myopia; unconsciousness or prostration; enlargement of the eyeball; exophthalmos (*q.v.*)

Treatment.—The treatment is causal. Meanwhile, protect the eye against drying by uniting the lids with adhesive plaster and applying a bandage over a gauze-covered cotton pad. In light cases it may only be necessary to do this at night. If the lids cannot be approximated, cover the eye hermetically, by means of adhesive plaster and collodion, with a watch crystal containing moist cotton. In appropriate cases, a tarsorrhaphy may be performed, to shorten the palpebral fissure.

Latent Convergence or Esophoria.—L. *látens,* hidden; *con,* together + *verg'ere,* to incline; Gr. ἔσω inward + φερεῖν to bear. See Muscular Anomalies.

Divergence or Exophoria.—L. *dis* apart + *verg'ere,* to tend; Gr. ἔξω out + φερεῖν to bear. See Muscular Anomalies.

Latent or Suppressed Squint.—L. *suppreśsio.* See Muscular Anomalies.

Lens, Dislocation of the.—L. *lens,* lentil. See Dislocation of the Lens.

Opacity of the.—L. *opaćitas.* See Cataract.

Lid, Adherent to the Eyeball.—See Symblepharon.

Drooping of the Upper.—See Ptosis.

Lids, Eczema of the.—See Eczema of the Lids.

Edema of the.—See Œdema of the Lids.

Everted.—L. *ever'sio,* a turning outward. See Ectropion.

Inverted.—L. *in,* into + *ver'tere,* to turn. See Entropion.

Granular.—L. *granúlum,* grain. See Conjunctivitis Trachomatosa.

Œdema of the.—See Œdema of the Lids.

Open.—See Lagophthalmos.

Spasm of the.—See Blepharospasm.

Light Sense.—See the Ocular Examination, in the Appendix, following Part 6.

Lipoma, Orbital.—Gr. λίπος fat + -ωμα tumor. See Orbital Tumors.

Subconjunctivale.—Gr. λίπος fat + -ωμα tumor; L. *sub,* under. See Conjunctival Tumors.

Lithiasis Conjunctivæ.—Gr. λίθος a stone. The occurrence of white, calcareous (gouty) concretions in the acini of the Meibomian glands.

Cocainize (using 4 to 5 per cent. cocaine), incise, and remove each concretion with a needle.

Luxation of the Lens.—L. *luxátio,* dislocation. See Dislocation of the Lens.

Lymphangioma Conjunctivæ.—L. *lym'pha,* water or lymph; Gr. ἀγγεῖον vessel + -ωμα tumor. See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

Manifest Muscular Insufficiency or Manifest Squint.—See Muscular Anomalies.

Meibomian Concretions.—H. Meibom (1638–1700); L. *cum,* together + *creścere,* to grow. See Lithiasis Conjunctivæ.

Cyst.—Gr. κύστις bladder. See Chalazion.

Gland Inflammation.—L. *glans,* a cord; *inflammáre,* to set on fire. See Hordeolum.

Membranous Conjunctivitis.—See Conjunctivitis Crouposa.

Meningocele, Orbital.—Gr. μῆνιγξ membrane + κήλη tumor. See Orbital Tumors.

Mikulicz's Disease.—See Part 1, General Medicine and Surgery.

Miner's Nystagmus.—See Nystagmus.

Miosis.—See Myosis.

Mole, Conjunctival.—L. *mol'es*, mass. See Conjunctival Tumors.

Mucous Cysts, Orbital.—L. *mućus*; Gr. *κύστις* bladder. See Orbital Tumors.

Muscæ Volitantes.—L. *flitting* flies. See Opacities in the Vitreous.

Muscle, Ciliary or Intrinsic, Paralysis of the.—L. *muśculus*; *cilium*, hair; *intriñsecus*, inside; Gr. *παρά* beside + *λύειν* to loosen. See Accommodation Anomalies.

Spasm of the.—Gr. *σπασμός*. See Accommodation Anomalies.

Extrinsic, Paralysis of.—L. *extrinsecus*, outside. See Muscular Anomalies.

Spasm of the.—See Muscular Anomalies

Orbicularis, Paralysis of.—L. *orbicula'ris*, circular or rounded. See Facial Paralysis in Part 1.

Spasm of.—See Blepharospasm.

Muscular Anomalies.—Gr. *ἀνωμαλία* abnormality.

Classification.—I. Muscular Insufficiency:

A. Manifest ("cross eyes"); squint; strabismus; heterotropia):

(*a*) Paralytic squint.

(*b*) Concomitant or ordinary squint.

B. Latent (suppressed or latent squint; heterophoria):

1. Esophoria; latent convergence; suppressed inclination to inward deviation.
2. Exophoria; latent divergence; suppressed inclination to outward deviation.
3. Hyperphoria; latent vertical squint; suppressed inclination to vertical deviation.

II. Muscular spasm, causing concomitant heterotropia or heterophoria.

III. Nystagmus (*q.v.*).

In heterotropia, binocular vision is lost. The squinting eye soon becomes amblyopic, because the images formed in this eye are constantly suppressed to prevent double vision (see Diplopia,); therefore the necessity for early treatment.

In heterophoria, binocular vision is maintained by a constant effort, which may lead to marked asthenopia symptoms (see Asthenopia,) or to manifest (concomitant) squint.

A. (*a*) Paralytic or Paretic Squint.—In paralytic squint, the latter increases when the eye is turned toward the paralyzed muscle, whereby it is distinguished from the ordinary (concomitant) squint, due usually to refractive anomalies, in which the squinting eye follows all the movements of the fixing eye, maintaining always the same angle with it. Paralytic squint of long duration, however, in which the antagonist of the paralyzed muscle is contractured, can scarcely be distinguished from concomitant squint. "Indeed," says Duane, "many cases of concomitant squint are without doubt paralytic in origin."

Etiology of Paralysis of the Ocular Muscles.—(1) *Acute.*—Poisoning with alcohol, tobacco, lead, sulphuric acid, gelsemium, conium, chloral, carbon monoxide, fish, and meat; acute infectious diseases, *e.g.*, diphtheria, influenza, "cold," tonsillitis, measles, whooping-cough, herpes zoster, acute poliomyelitis, mumps, basal meningitis (tubercular or epidemic); orbital cellulitis; tenonitis; sinusitis; fracture; basal hemorrhage; basal abscess; cerebral hemorrhage; cerebral injury.

(2) *Chronic.*—Syphilis; tabes dorsalis (frequently ushered in by transitory and recurrent ocular paresis); dementia paralytica; disseminated sclerosis; myasthenia; exophthalmic goitre; orbital periostitis; tumors; basal hemorrhage, meningitis, abscess, thrombosis, or aneurysm; cavernous sinus disease; otitic disease; progressive muscular atrophy; bulbar paralysis; gout; rheumatism; diabetes; hysteria.

Paralysis of the third or oculomotor nerve (which supplies the levator palpebræ superioris, the superior, internal, and inferior recti, the inferior oblique, the ciliary muscle, and the constrictor iridis), producing downward and outward squint, diplopia, and ptosis, with or without semi-dilatation of the pupil and impairment of near vision (due to cycloplegia: see Accommodation Anomalies), is usually due to syphilis or "rheumatism."

Paralysis of the fourth or trochlear nerve (which supplies the superior oblique), producing squint more marked on looking down and diplopia on looking down, and paralysis of the sixth or abducens nerve (which supplies the external rectus), producing inward squint, inability to turn the eye outward, and diplopia on looking outward, are usually due to "cold" (Theobald); to the rheumatic poison or diabetes (Wood and Woodruff); often to influenza.

Periodic ocular paralysis with headache and often vomiting (ophthalmoplegic migraine) may be due to hysteria, to arteriospasm (see Migraine, in Part 1, on General Medicine and Surgery), or to a circumscribed exudate or small tumor at the base of the brain, pressing upon the nerve tract.

Conjugate paralyses, manifested by inability to look with both eyes conjointly to

the right or left, or up or down, etc., are due to lesions (usually cerebral hemorrhage, sometimes hysteria) involving the centres for the associated movements of the eyes (in conjugate spasm, although the eyes are strongly deviated in one direction, they can be moved in the opposite direction).

Treatment of Ocular Paralysis.—In acute cases with pain, apply to the temple heat, counter irritation, or leeches, or the Heurteloup artificial leech. Where "cold" or "rheumatism" is the supposed cause, prescribe potassium iodide, gr. v–x, well diluted, t.i.d.p.c. (see Drugs, Part 11), or sodium salicylate. Diaphoresis should be encouraged by means of blankets, hot bottles, and copious hot drinks.

Syphilitic cases call for specific treatment. Arsenic is recommended, no matter what the cause.

In order to obviate the annoying diplopia and resulting dizziness, cover the affected eye with an opaque glass, or use prisms.

After the acute symptoms have subsided, prescribe strychnine, or nux vomica, in ascending doses; and employ, if desired, the galvanic current, the cathode over the closed lid and the anode over the temple, using a very weak current, 1 to 1½ milliampères, for five minutes daily.

If the paralysis proves incurable, perform tenotomy of the opposing muscle, or advancement (resecting a large portion of the tendon) of the paralyzed muscle, or both.

The prognosis in both syphilitic and rheumatic cases is favorable.

A. (*b*) Concomitant or Ordinary Squint.—In this form of strabismus, the squinting eye follows all the movements of the fixing eye, maintaining always the same angle with it, whereas in paralytic strabismus the squint increases when the eye is turned toward the paralyzed muscle (but see also Paralytic Squint, preceding).

The squint may be convergent, divergent, or vertical; constant, periodic, or intermittent. It may shift from one eye to the other. Says Theobald, "It is never bilateral, and diplopia is rarely complained of." "It usually develops in early childhood."

Etiology.—Refractive anomalies (the usual cause); marked difference in the acuteness or refraction of the two eyes; total blindness; defective fusion faculty (see "cover test" below); congenital or acquired muscular deficiencies ("muscle too long or too short, too much or too little developed, imperfectly or unduly innervated": see Muscular Spasm).

The "cover test" is performed as follows: Have the patient regard fixedly a small candle-light upon a black background five or six metres distant, and cover the left eye with a screen. Then pass the screen rapidly in front of the right eye and note the movement of this eye behind the screen. Outward deviation indicates exophoria; inward deviation, esophoria; and vertical deviation, hyperphoria.

Convergent concomitant squint occurs usually in early childhood as a result of hypermetropia, exceptionally in high grade myopia. Divergent concomitant squint usually develops in adults as a result of myopia.

Treatment.—Correct errors of refraction by means of appropriate glasses, with perhaps esophoric or exophoric prisms. Exercise the eyes in binocular vision, several times a day, for a few minutes at a time, by producing diplopia with prisms or the stereoscope or amblyoscope, and training the eyes to fuse the double images (orthoptic training: Gr. ὀρθός straight + ὀπτικός optic). Encourage vision in the affected eye by shading or atropinizing the good eye or by "bar reading," that is, holding a ruler vertically a few centimetres in front of the patient's nose, with the edge of the ruler toward the nose, and practicing him in reading without moving his head to one side or the other of the printed page. Employ, also, general tonic treatment, *e.g.*, adequate rest and exercise, fresh air day and night, a daily morning tepid bath in a comfortable room, before breakfast, followed by a cool spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, nutritious food, abstention from alcohol, tea, coffee, and tobacco, rest before and after meals, regulation of the bowels, and perhaps a tonic, such as the elixir ferri, quininæ, et strychninæ phosphati; (Part 11); and correct any associated disorder, particularly intranasal disease (see Part 8 on Nose Diseases).

If the above measures are insufficient, operate. In convergent squint, advance the external rectus, with, if required, tenotomy of the internal rectus. In divergent squint, advance the internal rectus and tenotomize the external rectus. Vertical squint is rare; tenotomy of the superior or inferior rectus is usually demanded.

B. Heterophoria.—Have the patient fixate with both eyes an object 30 cm. distant, then cover one eye with a screen. If, on removing the screen, the covered eye moves in order to fixate the object, it indicates a latent muscular insufficiency.

Heterophoria (less often actual squint) may cause marked asthenopia, intermittent blurring of vision which may be attended by diplopia, eccentric attitudes of the head, even torticollis, "great discomfort when attempting to watch moving objects," "inability to gaze attentively at stationary objects," etc. (see Asthenopia). These symptoms are relieved at once by closing one eye.

Etiology.—Muscular weakness or paresis, either congenital or due to anæmia, nervous debility, pelvic disorders, intranasal disease, malaria, rheumatism, refractive errors, faulty attachment of the muscle, excessive action of the opposing muscles, insufficient innervation, etc.; muscular spasm (*q.v.*).

Treatment.—Enjoin the observance of correct hygiene in order to improve the nervous and muscular tone—adequate rest and exercise, fresh air day and night, a daily morning tepid bath in a warm room before breakfast, followed by a cool or cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, simple, wholesome diet, abstention from alcohol, tea, coffee, and tobacco, rest before and after meals, regulation of the bowels, and if indicated, iron, arsenic, calcium, glycerophosphates, or hypophosphites, codliver oil, and strychnine (see Drugs, Part 11). Strychnine or nux vomica is given in ascending doses. Any associated disorder, particularly nasal disease, should of course be attended to. In spasmodic heterophoria, says De Schweinitz, "large doses of tincture of hyoscyamus are of distinct advantage" (see Muscular Spasm.)

In latent divergence, treat the condition only when causing asthenopia or when strabismus is threatened. In slight cases, employ prisms for both eyes, with the bases inward, to assist defective convergence; with, if required for myopia, concave glasses. In marked cases, advance the internal rectus, with, if required, tenotomy of the external rectus.

In latent convergence, treat the condition only when strabismus is threatened. Employ convex glasses for hypermetropia.

Hyperphoria is rare. Employ prisms. Operation is required only rarely in severe cases.

II. Muscular Spasm.—Muscular spasm is characterized by excessive movement of the affected muscle and false projection or orientation of objects, with perhaps diplopia, vertigo, etc. It is a cause of latent or manifest strabismus. Fuchs shows its differentiation from paralysis in the table below.

Etiology.—Excessively strong and overdeveloped muscle; over-close insertion to the cornea; excessive innervation, as in meningitis or other irritative affection of the brain, hysteria, tetanus, increased labyrinthine pressure, reflex irritation from dental caries, intranasal disease, etc.; overaction of the associate to the paralyzed muscle in the sound eye when the paretic eye fixes; overaction of a synergic muscle in the same eye with the paralyzed muscle; irregular contraction of the opponents of the paralyzed muscle; contracture of the opponent of the paralyzed muscle.

In conjugate spasm, due to lesions involving the centres for the associated movements of the eyes, although the eyes are strongly deviated in one direction, they can be moved in the opposite direction, thus distinguishing the condition from conjugate paralysis.

Muscular Imbalance.—L. *in*, not, *bílanx*, balance. See Muscular Anomalies.

Insufficiency, Latent.—L. *in*, not, + *sufficiens*, sufficient; *látens*, hidden. See Muscular Anomalies.

Insufficiency, Manifest.—See Muscular Anomalies.

Paralysis or Paresis.—Gr. παρά beside + λύειν to loosen; πάρεσις relaxation. See Muscular Anomalies.

Spasm.—Gr. σπασμός. See Muscular Anomalies.

Mydriasis, Dilatation of the Pupil.—Gr. μυδρίασις. **Causes.**—Paralysis of the third or

SPASM

The absolute excursion of the faster moving eye in the given direction is greater than normal; that of the other eye is normal.

The total excursion of the faster moving eye in the given direction and in the direction opposite is greater than normal—*i. e.*, the field of fixation is excessively large in one of its diameters.

Fixation is usually performed by the slower moving eye.

The amount of deviation may show great and sudden changes from time to time.

If false projection is present, it occurs when the faster moving eye is used for fixation (the other being closed), and the patient undershoots the mark he is trying to touch.

PARALYSIS

The absolute excursion of the faster moving eye is normal in the given direction; that of the other eye is subnormal.

The total excursion of the faster moving eye is normal, that of the other eye is subnormal—*i. e.*, the field of fixation of the latter is contracted in one of its diameters.

Fixation usually performed by the faster moving eye.

The amount of deviation remains constant or changes slowly and progressively.

False projection occurs when the slower moving eye is used for fixation, and the patient overshoots the mark he is trying to touch.

oculomotor (autonymic or para-sympathetic) nerve, which innervates, among other muscles, the sphincter iridis (see under Muscular Anomalies, for causes of oculomotor paralysis); paralysis of the terminal end of the oculomotor nerve in the sphincter iridis, due to the mydriatic drugs: atropine, homatropine, methyl-atropine, euphthalmine, eumydrin, ephedrine, mydrol, atroscine, scopolamine or hyoscine, hyoscyamine, dextrohyoscyamine, duboisine; paralysis of the oculomotor centre, due to meat, fish, mussel, cheese, or sausage poisoning; retinal or optic nerve paresis or paralysis; glaucoma; amblyopia or amaurosis; neurasthenia or depressed nervous tone; low mental development; anæmia; stimulation of the (sympathetic) dilator iridis, due to brain, meningeal, and spinal irritation, emotion, fright, vomiting, forced respiration, syncope or coma, many fevers, irritation of the cervical sympathetic due to scratching the skin of the neck, apical tuberculosis, aortic insufficiency, etc., and stimulation of the sympathetic nerve-endings by epinephrine and cocaine; adhesion of the iris to the lens capsule.

Myopia.—Gr. *μύειν* to shut + *ὤψ* eye. See Refractive Anomalies.

Myosis; Contraction of the Pupil.—Gr. *μείωσις, μείων* less. **Causes.**—Local or reflex irritation of the sphincter iridis, due to iritis, injury of the iris, uveitis, keratitis, or a foreign body in the eye; stimulation of the oculomotor (autonymic or para-sympathetic) nerve endings in the sphincter iridis caused by pilocarpine; augmentation of the excitability of the oculomotor (autonymic) nerve endings in the sphincter iridis, caused by physostigmine; opium; chloral; nicotine; brain, meningeal and high spinal lesions (tabes, general paresis, etc.), causing paralysis of the sympathetic dilator nerves; paralysis of the cervical sympathetic due to aortic aneurysm; paralysis of the fifth or trigeminal nerve; certain fevers and toxæmias; mitral disease; plethora; venous obstruction; long sustained efforts of accommodation; hysteria; onset of an epileptic attack; old age.

Myxoma Conjunctivæ.—Gr. *μύξος* mucus + *-ωμα* tumor. See Conjunctival Tumors.

Nasal Duct, Stricture of the.—L. *nasa'lis; duc'tus*, from *du'cere*, to lead; *strictu'ra*. See Dacryocystitis.

Near-Sightedness.—See Myopia, under Refractive Anomalies.

Neuritis, Optic.—See Optic Neuritis.

Neuroparalytic Keratitis.—Gr. *νεῦρον* nerve; *παρά* beside + *λύειν* to loosen. See Keratitis Neuropathica.

Neuropathic Keratitis.—See Keratitis Neuropathica.

Night-Blindness.—See Nyctalopia, below.

Nyctalopia; Night-Blindness.—Gr. *νύξ* night + *ἀλαός* blind + *ὤψ* eye. Imperfection of vision when the illumination is diminished.

Etiology.—"Torpor retinæ" due to malnutrition (insufficient or improper food, scurvy, pregnancy, chronic alcoholism, malaria, jaundice); keratomalacia; atrophy of the retina following retinitis, choroiditis, glaucoma, etc.; retinitis pigmentosa; "peripheral opacities of the cornea and lens"; "diffuse opacities distributed uniformly over the entire cornea," causing dazzling when the pupil is dilated; errors of refraction; heredity; congenital anomaly; hysteria; sun-blinding.

Night blindness due to torpor retinæ is usually associated with xerosis of the bulbar conjunctiva. It usually disappears spontaneously in a few weeks or months, but tends to recur in the spring or summer.

Nyctalopia is sometimes a family disease.

Treatment.—Attend to the cause. In torpor retinæ, prescribe a generous diet, cod-liver oil (see Vitamines), a tonic containing strychnine, fresh air, etc., and protect the eyes with dark glasses or in severe cases, keep the patient in a dark room for several days.

Nystagmus.—Gr. *νυστάζειν* to nod. An involuntary, rhythmical oscillation of the eyeball, horizontal, vertical, rotary, or mixed, usually bilateral.

Nystagmus is either ocular or vestibular.

In ocular nystagmus, the to-and-fro movements are equally rapid, whereas in vestibular nystagmus, there is a quick component in one direction and a slow component in the opposite direction. Ocular nystagmus is never rotary.

The quick component in vestibular nystagmus is toward the affected ear as long as a labyrinth is functioning. As soon as complete destruction of the labyrinth occurs, the quick component swings to the other side, where it remains for three or four days, after which it gradually disappears, unless some complication, such as meningitis, occurs, when it will again move toward the affected side. (Ballenger.)

A pseudo-nystagmus may occur when both eyes are turned far in one direction.

Causes of Nystagmus.—Bilateral amblyopia, either congenital or acquired, usually in early childhood (gonorrhœal ophthalmia neonatorum producing corneal opacities or anterior polar cataract, congenital opacities, marked refractive errors, albinism, retinitis pigmentosa, disease of the retina, optic

nerve or choroid, color blindness with small central scotomas); central nervous affections—disseminated sclerosis, syringomyelia, hereditary ataxia, chronic hydrocephalus, cerebral concussion, hemorrhage, degeneration, inflammation, or tumor of the meninges, cord, or brain, especially the cerebellum; hysteria; heredity; poisoning with ether, alcohol, cocaine, sulphonal, arsenic, lead, quinine, ergot, sewer-gas; " constant strain of the eyesight due to poor illumination or muscular strain or both," occurring in adult life, in miners, compositors, paper-makers, metal rollers, etc., and also in high astigmatism and traumatic cataract; rickets; ocular traumatism, tenotomy, etc., producing a transient nystagmus; labyrinthine (semicircular canal) disease or irritation, occurring in auditory neuritis, labyrinthitis, otitis media, intracranial, especially cerebellar disease (abscess, tumor, meningitis, hemorrhage, etc.), neurasthenia, sea-sickness, alcohol, tobacco, or intestinal intoxication, probing, application of the galvanic current, rapid rotation of the body, or syringing of the ear. (I do not possess sufficient data to be able accurately to separate the above causes into ocular and vestibular.)

Turning about ten times in twenty seconds, causes normally a primary nystagmus in the direction of the turning, and a secondary nystagmus after the turning, in the opposite direction. If the labyrinth of the ear toward which the turning is done, is affected, two turnings alone will produce nystagmus. (Ballenger.)

The introduction of cold or hot water in the external auditory canal, with the head upright, causes a nystagmus toward the other ear if cold is used, toward the same ear if hot is used. The nystagmus does not occur if the vestibular apparatus or nerve is destroyed or paralyzed. (Ballenger.)

Treatment.—Attend to the cause. Operate upon a cataractous lens, make a careful correction of refractive errors, correct strabismus, perform iridectomy for a new pupil, if need be, etc. Treatment in infantile nystagmus, however, is usually of little avail. Occupational nystagmus is relieved by a change of occupation.

Oblique Illumination.—See the Ocular Examination in the Appendix, following Part 6.

Muscles, Paralysis of the.—See Muscular Anomalies.

Obstruction of the Canaliculi.—L. *obstruct'io; canalićulus,* little canal. See Epiphora.

Obstruction of the Nasal Duct.—L. *nasa'lis; duct'us,* from *dućere,* to lead. See Dacryocystitis.

Puncta Lachrymalia.—L. *puńctum,* point; *laćrima,* tear. See Epiphora.

Occlusio Pupillæ.—L. See under Iritis.

Ocular Examination.—See the Appendix, following Part 6.

Ocular Muscles, Abnormal Balance of the.—L. *oćulus,* eye; *muśculus,* muscle; *bi'lanx,* balance; *ab,* from + *norm'a,* rule. See Muscular Anomalies.

Latent Insufficiency of the.—L. *in,* not + *sufficiens,* sufficient; *lat'ens,* hidden. See Muscular Anomalies.

Manifest Insufficiency of the.—See Muscular Anomalies.

Paralysis of the.—See Accommodation Anomalies and Muscular Anomalies.

Spasm of the.—See Accommodation Anomalies and Muscular Anomalies.

Tension.—See the Ocular Examination in the Appendix, following Part 6.

Oculomotor Paralysis.—L. *ocúlus,* eye; motor, moving; Gr. παρά beside + λύειν to loosen. See Muscular Anomalies.

Œdema of the Lids.—Gr. οἴδημα swelling.

Causes.—Local or nearby infection; erysipelas; trichiniasis; measles; whooping-cough; anæmia; nephritis; arsenical poisoning; angioneurotic œdema; a debauch; orbital cellulitis; orbital periostitis and osteitis; panophthalmitis purulenta.

Old Sightedness; Presbyopia.—Gr. πρέσβυς old + ὤψ eye. See Accommodation Anomalies.

Opacities of the Cornea.—L. *opaćitas* See Cornea, Opacities of the.

Lens.—L. *leńs,* lentil. See Cataract.

Opacities in the Vitrous.—L. *vit'reus,* glassy. Opacities in the vitreus are manifested by diminution of the visual acuity and the presence of floating specks, which are observed subjectively and with the ophthalmoscope (direct the patient to move the eye quickly in all directions and then hold it still, when the opacities may be seen to move in the vitreous).

" Muscæ volitantes " are not ordinarily due to opacities, but suggest " accommodative or muscular strain." (Theobald.)

Etiology.—The presence of unabsorbed exudate following uveitis or retinitis, or of unabsorbed hemorrhage into the vitreous.

Prognosis.—Only recent opacities which are not too large may be absorbed.

Treatment.—Measures to promote absorption are employed, viz., (1) energetic diaphoresis, practiced every day or every other day, by means of sodium salicylate or aspirin, gr. xx, dissolved in hot linden flower or elder

tea or lemonade, with the patient well wrapped in blankets; or by means of pilocarpine, gr. ⅛ to ¼, every other night; or a hot bath followed by woolen blankets; or hot bricks covered with wet cloths sprinkled with alcohol; (2) mercury, by mouth or inunction, and potassium iodide (see Drugs, Part 11); (3) saline purgatives; (4) subconjunctival injections of salt solution, 5 to 10 per cent., one-half to one syringeful; or of cyanide of mercury, 1 : 4000, 10 to 20 minims; and (5) galvanism.

Pilocarpine in doses even too small to produce sweating (gr. ⅛ to ⅟₁₀ or less) is recommended.

Ophthalmia Neonatorum.—See Part 4, Obstetrics.

Sympathetic.—See Sympathetic Ophthalmia.

Ophthalmoplegia Externa.—Gr. *ὀφθαλμός* eye + *πληγή* stroke; L. *exter'nus*, outside. See Muscular Anomalies.

Interna.—L. *interńus*, inside. See Accommodation Anomalies.

Ophthalmoplegic Migraine.—See under Muscular Anomalies.

Optic Atrophy.—L. *op'ticus*, visional; L. from Gr. *a* neg. + *τροφή* nourishment: wasting. Optic nerve atrophy is usually bilateral. It is manifested, clinically, by impairment of vision and dilatation and sluggishness of the pupil (except in certain spinal conditions in which the pupil may be contracted: spinal myosis). The cause is not always ascertainable.

There are two types of optic atrophy:

I. Primary, Simple, Non-Inflammatory.—The papilla becomes progressively paler, and eventually white or bluish-white, and sharply defined, with the lamina cribrosa plainly visible as gray dots.

Etiology.—Tabes dorsalis (the commonest cause; prognosis bad); dementia paralytica; multiple sclerosis (prognosis relatively good); Friedreich's ataxia; chronic myelitis; paralysis agitans; spastic spinal paralysis; bulbar paralysis; compression of the nerve by tumor, dilated sclerosed arteries, periosteal thickening, fracture, etc.; amaurotic family idiocy; skull deformities; heredity; arteriosclerosis; syphilis; venereal excesses; methyl or wood alcohol; lead; chronic malaria; diabetes; excessive hemorrhage; menstrual disturbances; imperfect nutrition; cold.

Treatment.—This is causal. Strychnine in increasing doses, nitroglycerin (see Part 11), local galvanism, and the high-frequency current are employed, but usually with but little avail.

II. Secondary, Inflammatory.—The papilla is white, but the margins are ill-defined, and the lamina cribrosa not visible.

Etiology.—Optic neuritis; retinitis (including embolism or thrombosis of the central artery or vein); compression of the optic nerve, chiasma, optic tract, thalamus, lateral geniculate body, anterior quadrigeminal body, posterior part of the internal capsule, optic radiation, or cuneus of the occipital lobe, due to bulging of the lateral ventricles, tumors, exostoses, aneurysm, meningitis, traumatism.

Treatment.—This is causal. To promote the absorption of exudates, employ the measures described in the treatment of optic neuritis. Strychnine in ascending doses, nitroglycerin, local galvanism, and the high-frequency current are also indicated.

The Prognosis is somewhat better than in the primary type.

Optic Centres.—See Optic Chiasma, Tract, and Centres, below.

Chiasma, Tract, and Centres.—L. *chias'ma;* Gr. *χίασμα* crossing; L. *trac'tus*, tract; L. *cen'trum;* Gr. *κέντρον*. See Brain Localization, in Part 1.

Optic Neuritis.—Gr. *νεῦρον* nerve + *-ιτις* inflammation. Two forms of optic neuritis are distinguished, an intraocular form (papillitis or choked disc) and a retrobulbar form. The disease is manifested by impairment of vision (not always present, however, in choked disc), some dilatation and sluggishness of the pupil, and characteristic opthalmoscopic changes in the intraocular form, but few or none in the retrobulbar form. The opthalmoscopic changes are a deepening of color of the optic disc, due to congestion, a gradual loss of outline or blurring and marginal striation, narrow arteries and distended, tortuous veins. Papillitis may be simulated by simple hyperæmia of the disc (increased redness, hazy outlines, dilatation and tortuosity of the retinal vessels), occurring congenitally and as a result of eye-strain, irido-cyclitis, choroiditis retinitis, and arteriosclerosis.

Optic neuritis may be followed by atrophy, or more or less vision may be restored, according to the cause and severity of the neuritis.

Intraocular neuritis is usually bilateral, and of serious prognosis.

Retrobulbar neuritis is either acute or chronic, and is generally of good prognosis. The acute variety is usually unilateral, frequently accompanied by retrobulbar tenderness, and always by central obscuration of vision, which progresses in from one to

eight days to more or less complete blindness, with a tendency to recovery. The chronic variety (toxic amblyopia) is commonly bilateral, and is accompanied by central obscuration of vision and central, egg-shaped, symmetrical color scotomas, especially for red and green. If taken in time, the prognosis is also usually good.

I. Intraocular Neuritis, Papillitis, or Choked Disc.—ETIOLOGY.—Intracranial new growths; acromegaly; syphilis; meningitis, acute and chronic, especially, in children, tuberculous meningitis; abscess of the brain; sinus thrombosis; hydrocephalus; hemorrhagic pachymeningitis; cerebritis; head injuries; cerebral hemorrhage, embolism, thrombosis, œdema, or aneurysm; skull deformities; rarely acute myelitis, general paresis, epilepsy, disseminated sclerosis, or tetany; orbital inflammation or new growth; sinusitis; dental caries; acute infectious fevers; toxic agents (lead, atoxyl, Felix'smass, alcohol, iodoform); nephritis; diabetes; gout; menstrual disorders; pregnancy; lactation; anæmia, especially that due to severe hemorrhage; myxœdema; sunstroke; exposure to cold; lightning stroke; violent exertion and injuries; congenital; heredity.

TREATMENT.—This is, of course, causal (consult the appropriate part and caption). In choked disc due to brain lesions (including meningitis serosa, cerebral œdema, infections, intracranial hemorrhage, new-growths, etc.), cerebral decompression should be done early in order to save the sight.

To promote local absorption, the following measures are employed, sometimes with benefit, *e.g.*, rest of the eyes, purgation, mercury and potassium iodide (see Part 11) in large doses, leeches or the artificial Heurteloup leech to the mastoid process, and diaphoresis practiced every day or every other day by means of the Turkish bath followed by woolen blankets, or the hot air bath, using a lamp and two chairs covered with rubber sheeting, or hot bricks surrounding the patient beneath blankets, the bricks being covered with wet cloths sprinkled with alcohol, or sodium salicylate or aspirin, gr. xx, dissolved in hot peppermint tea or lemonade, with the patient well wrapped in blankets, or the use of pilocarpine, gr. $\frac{1}{8}$ to $\frac{1}{4}$, every other night.

Harry Gifford prescribes sodium salicylate, gr. xv, well diluted in water and brandy, eight to twelve times a day for about a week. Then, if no decided sweating is produced, he changes to large doses of potassium iodide, together with pilocarpine, gr. $\frac{1}{5}$ to $\frac{1}{3}$ (very large doses; pilocarpine is a dangerous heart depressant), in a glassful of hot whiskey and water, adding 15 grains of sodium salicylate if the pilocarpine does not produce free diaphoresis.

II. Retrobulbar Neuritis.—(a) ACUTE RETROBULBAR NEURITIS.—*Etiology.*—Syphilis; rheumatism; gout; diabetes; acute infectious diseases; sudden suppression of the menstrual flow; exposure to wet and cold; rhinitis; sinusitis; orbital cellulitis, periostitis, syphilis, etc.; overwork; prolonged eye-strain; multiple sclerosis; myelitis; alcohol; tobacco; lead; methyl or wood alcohol; heredity.

Treatment.—This is causal. To promote absorption, employ the measures described under Intraocular Neuritis, and prescribe strychnine in ascending doses, beginning with gr. $\frac{1}{30}$, t.i.d.p.c., and increasing gradually to five or six times this amount (see Part 11 for toxic effects).

(b) CHRONIC RETROBULBAR NEURITIS; TOXIC AMBLYOPIA.—Etiology.—Alcohol and tobacco (the commonest causes); nitrobenzol; carbon disulphide ("employed in vulcanizing rubber"); arsenic; lead; iodoform; stramonium; cannabis indica; chloral; opium; atoxyl; diabetes; rheumatism, gout; exposure to wet and cold, etc. (There is a special form of retrobulbar neuritis, a family disease commonly known as hereditary nerve atrophy.)

Treatment.—Withdraw the poison, or remove, if possible, the source of intoxication, administer water in copious amounts, and employ the measures for promoting absorption described under Intraocular Neuritis. Strychnine in ascending doses is recommended, beginning with gr. $\frac{1}{30}$, t.i.d.p.c., and increasing gradually to five or six times this amount (see Part 11, for toxic effects; see also Toxic Amblyopia.)

Optic Tract.—See Optic Chiasma, Tract, and Centres.

Orbicularis Muscle, Paralysis of the.—L. *orbicular'is*, circular or rounded. See Facial Paralysis, in Part 1.

Spasm of the.—See Blepharospasm.

Orbital Abscess.—L. *orb'ita*, track; *abscessŭs*, a going apart. See Orbital Cellulitis, below.

Cellulitis.—L. *cel'lula*, little cell + Gr. *-ιτις* inflammation. Inflammation of the orbital cellular tissue may be acute, subacute, or chronic. It is manifested, according to the degree of intensity of the infection, by local pain and tenderness, conjunctival injection and chemosis, redness and œdema of the lids, exophthalmos and resulting diplopia, pyrexia, etc.

Etiology.—Traumatism; orbital operations; facial infection (erysipelas, etc.); sinusitis;

dental caries; orbital periostitis and osteitis (*q.v.*); panophthalmitis (*q.v.*); meningitis; pyæmia, "cold," influenza, scarlet fever, typhoid fever, etc.

Treatment.—Open the bowels by means of castor-oil or calomel followed by a saline (see Drugs, Part 11). To combat the infection, Theobald recommends the administration of sodium pyrophosphate, or quinine, in full doses, or sodium salicylate, or fractional doses of calomel. Apply hot fomentations for the purpose of promoting the reaction of inflammation, and perhaps six to ten leeches or the artificial Heurteloup leech to the temple. When it is evident that pus has formed, make a free incision through the lid or conjunctiva, as seems best, and insert a gauze drain. Renew this every day, or less often, as required, until healing occurs. Antiseptic irrigations (using hot boric acid solution, 3 to 4 per cent., or bichloride, 1 : 8000 to 1 : 4000, two or three times daily, or less often) are probably better omitted, as a rule. Experience favors simple gauze drainage.

Orbital Osteitis.—(See Orbital Periostitis and Osteitis, below.)

Periostitis and Osteitis.—Gr. *περί* around + *ὀστέον* bone + *-ιτις* inflammation. The inflammatory process may be acute or chronic. The symptoms resemble those of orbital cellulitis (*q.v.*). A sinus may ensue.

Etiology.—Syphilis; tuberculosis; rheumatism; sinusitis; traumatism.

Treatment.—Attend to the cause; otherwise treat the infection locally and constitutionally, the same as orbital cellulitis (*q.v.*). Dead, detached bone should be removed. For the purpose of dissolving diseased bone, there is recommended syringing with hydrochloric acid solution, 2 to 4 per cent., cautiously increased to 20 to 25 per cent., if well borne, or the direct application, on a cotton-wound probe, of hydrochloric acid (c.p.) diluted with three or four parts, and later equal parts of water.

Orbital Tumors.—L. *tu'mor*, swelling.

Benign.—Fibroma, lipoma, angioma, lymphangioma, osteoma, enchondroma, lymphoma, gumma, dermoid cyst; hydatid cyst, cysticercus cyst, sebaceous cyst, exostosis, hyperostosis, cephalocele and meningocele (fluctuating, transparent prominence on the inner side of the orbit), lupus from the face, aneurysm, mucous cysts (which may communicate with the nose), polypi from the nose or accessory sinuses, hæmatoma, cyst of the lachrymal gland (either congenital or due to occlusion of the excretory ducts), hypertrophy of the lachrymal gland (congenital or syphilitic, or Mikulicz's disease, Part 1).

Malignant.—Carcinoma, sarcoma, epithelioma, endothelioma.

Displacement of the eyeball is common to all orbital tumors (see Exophthalmos).

Treatment.—Benign tumors may be excised, excepting deep-seated cysts, which should be opened and their walls destroyed with tincture of iodine or silver nitrate. If it is impracticable to excise an angioma, it may be destroyed by electrolysis. In employing electrolysis, an anæsthetic is usually required. The needle is attached to the negative electrode, and the positive electrode, covered with a wet sponge, is applied to any convenient part of the body. A current of from one to five or more milliampères, depending upon the size of the growth, is used. Parallel punctures, ⅛ to ¼ inch apart, are made, down to the base of the growth, and the current allowed to act for from one-half to two or three minutes, or until a blanched line is produced in its course. The current should be increased and broken off slowly. The treatment is repeated every one to three weeks.

In cyst of the lachrymal gland, establish an opening between the cyst and the conjunctival sac by tying a silk thread tightly in the wall of the cyst and leaving it to cut its way out.

In hypertrophy of the lachrymal gland, if the enlargement is not extreme, one may administer potassium iodide (see Part 11) internally, and apply unguentum hydrargyri vel iodi locally; otherwise the gland should be removed.

Pulsating exophthalmos is sometimes cured by ligation of one or both common carotids, or the dilated, pulsating orbital veins.

Malignant tumors demand radical extirpation, followed by radium or the X-ray (*q.v.* in Part 1).

Ordinary or Concomitant Squint.—L. *cum*, together + *co'mes*, companion. See Muscular Anomalies.

Osteitis and Periostitis of the Orbital Walls.—See Orbital Periostitis and Osteitis.

Osteoma, Orbital.—Gr. *ὀστέον* bone + *-ωμα* tumor. See Orbital Tumors.

Overflow of Tears, Abnormal.—See Epiphora.

Ox-Eye.—See Glaucoma.

Pannus.—L. *cloth*. See under Conjunctivitis Trachomatosa.

Panophthalmitis Purulenta.—Gr. *πᾶς* all + *ὀφθαλμός* eye + *-ιτις* inflammation; L. *purulent'us*, purulent. Suppurative inflammation of the eyeball (suppurative irido-choroiditis)

is manifested by the presence of exophthalmos, chemosis of the conjunctiva, œdema of the lids, haziness of the cornea, a yellow reflection in the vitreous (pseudo-glioma), loss of vision, pain, tenderness, and pyrexia.

Etiology.—Traumatism; perforating corneal ulcer; entrance of bacteria through a thin corneal cicatrix; uveitis; retinitis; septicopyæmia, or bacteræmia, such as may occur in puerperal infection, erysipelas, inflammation of the umbilical vein, thrombosis of the orbital veins, dysentery, bronchitis, whooping-cough, influenza, diphtheria, pneumonia, anthrax, Weil's disease (infectious jaundice), measles, scarlet fever, smallpox, cerebro-spinal meningitis, basic meningitis, typhoid fever.

Treatment.—Open the bowels thoroughly by means of castor-oil, or calomel followed by a saline (see Drugs, Part 11). For the purpose of combating the infection, one may administer sodium pyrophosphate (Theobald), or quinine in full doses, or sodium salicylate, or fractional doses of calomel. Apply hot fomentations for the purpose of promoting the reaction of inflammation, and perhaps six to ten leeches or the artificial Heurteloup leech to the temple. Morphine may be required for the pain. Give subconjunctival injections of cyanide of mercury, 1 : 4000, 10 to 20 minims.

Remove the eye (see Enucleation) as soon as it "is evident that there is no hope of preserving sight" (Theobald). In fully developed cases of suppuration, however, it is safer, in order to avoid the risk of secondary meningitis, to evacuate the pus by a free incision of the sclera (Fuchs), and enucleate the eye later, after the infection has been destroyed, or should the shrunken eye become inflamed, which is exceptional. Meningitis is much less likely to follow evisceration than enucleation.

Papillitis.—L. *papil'la*, nipple + Gr. *-ιτις* inflammation. See Optic Neuritis.

Papilloma Conjunctivæ.—L. *papil'la*, nipple + Gr. *-ωμα* tumor. See Conjunctival Tumors.

Paralysis, Abducens.—Gr. *παρά* beside + *λύειν* to loosen; L. *ab*, from + *du'cere*, to draw. See Muscular Anomalies.

Accommodation.—See Accommodation Anomalies.

Ciliary Muscle.—L. *cil'ium*, hair or lash; *mus'culus*, muscle. See Accommodation Anomalies.

Facial.—See Facial Paralysis, in Part 1.

Fourth Nerve.—See Muscular Anomalies.

Oculomotor.—L. *oc'ulus*, eye + *mo'tor*, mover. See Muscular Anomalies.

Paralysis, Orbicular Muscle.—L. *orbicula'ris*, circular or rounded. See Facial Paralysis, in Part 1.

Sixth Nerve.—See Muscular Anomalies.

Sphincter Pupillæ.—Gr. *σφιγκτήρ* binder; L. *pupil'la*, girl. See Accommodation Anomalies.

Third Nerve.—See Muscular Anomalies.

Parenchymatous Keratitis.—See Keratitis Interstitialis.

Parinaud's Conjunctivitis.—See Conjunctivitis, Parinaud's.

Penetrating Wounds of the Eyeball.—See Injuries of the Eye.

Periodic Episcleritis.—See Episcleritis.

Periostitis and Osteitis of the Orbital Walls.—See Orbital Periostitis and Osteitis.

Phlyctenular Keratoconjunctivitis.—See Conjunctivitis Phlyctenulosa.

Photophobia.—Gr. *φῶς* light + *φόβος* fear. Abnormal intolerance of light, occurring in keratitis and uveitis.

Pigmented Mole of the Conjunctiva.—L. *pigmeńtum*, paint; *mo'les*, fleshy mass. See Conjunctival Tumors.

Pinguecula.—L. *piñguis*, fat. A yellowish, colloidal (Gr. *κολλώδης* glutinous), ridge-like elevation upon the interpalpebral conjunctiva, on either side of the cornea, due probably to irritation caused by winds, dust, etc.

If unsightly, it may be removed with curved scissors, the adjoining conjunctiva slightly undermined, and its cut edges united by fine silk sutures, which should be removed at the end of three days. (Theobald.)

Pink-Eye.—See Conjunctivitis Catarrhalis.

Polyopia.—Gr. *πολύς* many + *ὄψις* vision. See Diplopia.

Polypi Canaliculorum.—Gr. *πολύς* many + *πούς* foot; L. *canalićulus*, little canal. See Epiphora.

Conjunctivæ.—See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

Presbyopia; Old-Sight.—Gr. *πρέσβυς* old + *ὤψ* eye. See Accommodation Anomalies.

Prolapse of the Iris.—L. *pro*, before + *lábi*, to fall. See Keratitis Ulcerosa; and Penetrating Wounds of the Eyeball.

Protrusion of the Cornea and Iris.—See Cornea, Staphyloma of the.

Eyeball.—See Exophthalmos.

Protrusion of the Sclera.—See Sclera, Staphyloma of the.

Pseudo-Glioma.—Gr. *ψευδής* false. See Panophthalmitis Purulenta.

Pterygium.—Gr. *πτερύγιον* wing. A median, transverse, wedge-shaped, slow-growing hypertrophy of the conjunctiva, the apex of

the wedge approaching or encroaching upon the cornea, and the base extending toward the inner canthus. It should be distinguished from a similar "pseudo-pterygium" arising from an ulcer or wound of the corneal margin.

Etiology.—Exposure of the eyes to heat, winds, dust, etc.; probably also, according to Theobald, insufficiency of the internal recti muscles (exophoria).

Treatment.—Correct any existing accommodative, muscular, or refractive anomaly. Says Theobald, excise the growth if it is "narrow and well defined," or if it is growing, even though "broad and ill-defined," or if it is encroaching upon the cornea. McReynold's operation is perhaps the best:—

The neck of the pterygium is grasped in its entirety with strong but narrow fixation forceps, a Graefe knife is passed beneath it, as close to the globe as possible, with its cutting edge toward the cornea, and the growth is completely and smoothly shaved off from the cornea. With the pterygium still held in the grasp of the fixation forceps, the conjunctiva is divided with slender straight scissors down to the sclera along the lower oblique margin of the pterygium. The latter is now separated with a blunt instrument from the sclera, and then the conjunctiva is well separated from the underlying sclera from the oblique incision downward and halfway around the inferior border of the cornea. A small curved needle carrying a black-silk thread is now passed through the apex of the pterygium. near its upper margin from within outward (or behind forward) and then back again near its lower margin from without inward, and the tail end of the silk is then threaded through another small curved needle. Both needles are now carried downward beneath the loosened lower conjunctiva to the lower fornix of the eyeball and are pushed out or forward through the conjunctiva at a distance apart from each other of about ⅛ to ¼ of an inch. Then the loosened conjunctiva is lifted up with forceps and traction exerted upon the needles so as to draw the pterygium down beneath the conjunctiva. The threads are now tightened and tied. They are removed after union has occurred. No incision should be made along the upper border of the pterygium.

Ptosis.—Gr. *πτῶσις* fall. Drooping of the upper eyelid.

Etiology.—Congenital, often hereditary, usually bilateral absence or imperfect development of the levator palpebræ superioris muscle; oculomotor or third nerve paralysis due to syphilis, tabes dorsalis, general paresis, disseminated sclerosis, basal hemorrhage, meningitis, abscess, thrombosis, or aneurysm, cerebral injury or hemorrhage, cavernous sinus disease, bulbar palsy, orbital periostitis, orbital cellulitis, sinusitis, fracture, tumors, otitic disease, gout, rheumatism, diabetes, hysteria, diphtheria, influenza, "cold," tonsillitis, measles, whooping-cough, herpes zoster, acute poliomyelitis, mumps, poisoning with alcohol, tobacco, lead, sulphuric acid, gelsemium, conium, chloral, carbon monoxide, fish, and meat (symptoms of oculomotor paralysis, besides ptosis, are downward and outward squint, diplopia, with or without semi-dilatation of the pupil and impairment of near vision); myasthenia gravis; exophthalmic goitre; neurasthenia; migraine; cervical sympathetic paralytic lesions (producing moderate ptosis of an eye, with retraction of the eyeball, miosis, and flushing of the affected side of the face); injury to the lid; increased weight of the lid due to chronic conjunctivitis, tarsitis, hypertrophic blepharitis, and tumors; relaxed condition of the skin of the lid; primary atrophy of the muscle developing without known cause in middle-aged women; debility (a transient ptosis occurs in weak, delicate women, particularly in the morning).

Syphilis is the commonest cause of ptosis. "The cases of isolated ptosis without any other signs of oculomotor paralysis are caused mainly by central disease," says Fuchs.

Treatment.—This is causal. Blisters (see Part 11) to the forehead and temples may be of service in appropriate cases. Galvanism and strychnine (Part 11) may be of service after the acute symptoms have subsided.

For congenital ptosis and chronic ptosis that does not respond to constitutional treatment, operate.

Puncta Lachrymalia, Stenosis of the.—L. *punctum*, point; *lacrima*, tear; Gr. *στένωσις* narrowing. See Epiphora.

Pupil, Contraction of the.—L. *pupil'la* girl; *con*, together + *trahere*, to draw. See Myosis.

Dilatation of the.—See Mydriasis.

Occlusion of the.—L. *occlusio*. See under Iritis.

Seclusion of the.—L. *seclusio*. See under Iritis.

Unequal.—See Anisocoria.

Purulent Panophthalmitis.—See Panophthalmitis Purulenta.

Rectus Muscles, Paralysis of the.—L. *rectus*, straight. See Muscular Anomalies.

Refraction Anomalies.—L. *refring'ere*, to break apart; Gr. *ἀνωμαλία* abnormality. Uncorrected errors of refraction are apt to cause eye-strain with its manifold train of disturbances (see Asthenopia).

I. Myopia; Near- or Short-Sightedness (Gr. *μύειν* to shut + *ὤψ* eye).—In myopia, parallel rays come to a focus in front of the retina, requiring for its correction concave glasses. In adults, divergent concomitant squint (see Muscular Anomalies) may result. In children, convergent squint is a rare result of high grade myopia.

Causes of Myopia.—Increased corneal curvature, due to staphyloma or keratoconus; increase curvature of the lens, due to luxation or ciliary spasm; increased density of the lens in approaching senile cataract; posterior staphyloma, rarely congenital, but usually acquired in youth as a result of habitual straining of the eyes at near work with poor illumination, aided by an anatomical or hereditary predisposition to myopia (the commonest cause).

II. Hypermetropia; Far-Sightedness (Gr. *ὑπέρ* over + *μετρον* measure + *ὤψ* eye).—In hypermetropia, parallel rays come to a focus behind the retina, requiring for its correction convex glasses. In children, convergent concomitant squint may result (see Muscular Anomalies).

Causes of Hypermetropia.—Flattening of the cornea, due to cicatrization; diminished refractive power of the lens, due to advanced age; complete luxation or operative removal of the lens; protrusion of the retina into the vitreous, due to inflammatory exudation, hemorrhage, or tumors; congenital shortening of the eyeball (the common cause).

III. Astigmatism (Gr. *α* priv. + *στίγμα* point).—In astigmatism the different meridians of the refracting media (ordinarily the cornea) refract differently, owing to differences in their curvature.

(a) Regular Astigmatism, in which, while the curvatures of the different meridians differ one from another, the curvature of each meridian is regular. It is corrected by cylindrical glasses.

Causes of Regular Astigmatism.—Congenital, perhaps hereditary, irregularity of the corneal curvature (almost always the cause); rarely keratitis, or operations upon the cornea, or subluxation of the lens.

(b) Irregular Astigmatism, in which the curvature of each meridian is irregular, so that different portions of the same meridian have different refracting powers. Reading may be aided by means of stenopœic glasses.

Causes of Irregular Astigmatism—Incipient cataract; subluxation of the lens; corneal ulceration, flattening, or ectasia.

IV. Anisometropia (Gr. *ἄνισος* unequal + *μέτρον* measure + *ὤψ* eye).—In anisometropia, the refraction differs in the two eyes.

Retina, Detachment of the.—See Detachment of the Retina.

Glioma of the.—See Glioma of the Retina.

Hemorrhages in the.—Gr. *αἷμα* blood + *ῥηγνίναι* to burst forth. See Retinitis, below.

Retinitis.—L. *ret'ina* + Gr. *-ιτις* inflammation. Retinitis is characterized, clinically, by impairment of vision, and enlargement and sluggishness of the pupil, no pain; and ophthalmoscopically by retinal opacity or loss of transparency, which "may manifest itself as a faint, diffuse haze, a circumscribed opacity and swelling (exudate), or as streaks of white infiltration, especially along the lines of the larger vessels" (De Schweinitz). Retinal hemorrhages are apt to occur. These form dark red patches, which, if the hemorrhage is in the nerve-fibre layer, are striate or flame-shaped. (Simple retinal hemorrhage is also here included.)

Nephritic retinitis is characterized by the presence of "whitish, degenerative patches arranged in stellate fashion about the macula" (Wood and Woodruff). Uræmic amaurosis, however, is cerebral in origin.

Retinal arteriosclerosis is characterized by increased tortuousness of the arteries, corkscrew appearance of the arterial twigs, "silver wire" appearance of the arteries, variation in calibre, indention of veins by sclerosed arteries, congested appearance of the optic disc, hemorrhages, œdema, and exudates.

Embolism or thrombosis of the central artery of the retina is characterized by the occurrence of sudden blindness, and opthalmoscopically by the appearance of arterial anæmia and a "cherry spot," rarely a "coal-black" spot in the macula lutea.

Thrombosis of the central vein is characterized by great distention of all the retinal veins, while the arteries are scarcely visible, together with the presence of retinal hemorrhages.

There is an atrophic "retinitis pigmentosa," which occurs in childhood, or is congenital, and is early made manifest by night-blindness, and is frequently associated with nystagmus.

Etiology.—Syphilis; nephritis; diabetes; gout; arteriosclerosis; plumbism; phosphorus poisoning; extensive cutaneous burns; leuk-

æmia; scurvy; purpura; grave anæmias; toxæmia of pregnancy; oxaluria; jaundice; suppressed menstruation; the climactery; sepsis; typhoid fever; relapsing fever; malaria with anæmia; ocular inflammation (uveitis, optic neuritis, etc.); exposure to excessive light; exposure to cold; "prolonged accommodative strain"; cardiac disease (causing passive hyperæmia and hemorrhage); traumatic rupture of blood vessels, as in compression of the skull during parturition; iridectomy for glaucoma; embolism of the central retinal artery, due usually to valvular heart disease, also to aneurysm, arteriosclerosis, Bright's disease, pregnancy, chorea; thrombosis of the central artery, due to endarteritis, blood alterations, severe hemorrhage; compression of the central artery, due to hemorrhage or inflammatory infiltration in the optic nerve; thrombosis of the central vein, due to organic heart disease, arteriosclerosis, syphilis, excessive hemorrhage, orbital disease, disease of the cavernous sinus, facial erysipelas, blood alterations; atrophic retinitis pigmentosa, due to heredity, parental consanguinity, etc.

Prognosis.—Retinitis runs a slow course, usually extending over several months, with permanent impairment of vision, except in light cases, in which vision may be completely restored. Atrophy of the retina with resulting blindness may follow severe or recurrent attacks.

After the appearance of nephritic retinitis, the patient seldom lives longer than two years.

The outlook in retinitis pigmentosa is unfavorable, but complete blindness does not ordinarily supervene until the sixth decade or later. (Fuchs.)

Treatment.—Attend to the cause. Correct any existing accommodative, muscular, or refractive anomaly. Have the patient wear smoke-tinted glasses, and enjoin absolute rest of the eyes. Open the bowels by means of calomel or castor-oil (see Part 11); and in early cases apply hot fomentations to the closed lids, and perhaps from six to ten leeches or the artificial Heurteloup leech to the temple, unless the patient is anæmic. Instil atropine, gr. ii–iv to the ounce, one or two drops, once or twice a day, or often enough to keep the pupil dilated.

To promote absorption of the exudate, administer saline purgatives, mercury, and potassium iodide (see Part 11), and practice diaphoresis every day or every other day, by means of the Turkish bath followed by woolen blankets, or the hot-air bath, using a lamp and two chairs covered with rubber sheeting, or hot bricks surrounding the patient beneath blankets, the bricks being covered with wet cloths sprinkled with alcohol, or sodium salicylate or aspirin, gr. xx, dissolved in hot peppermint tea or lemonade, with the patient well wrapped in blankets, or the use of pilocarpine, gr. $\frac{1}{8}$ to $\frac{1}{4}$ every other night. Every day or alternate day, positive galvanism may be applied to the closed lids, using a current of one milliampère for ten minutes. (Ziegler.)

In embolism of the central artery, massage the eye energetically and faithfully, and have the patient inhale amyl nitrite for the purpose of dislodging the embolus, "so that it may find its way into one of the subdivisions of the artery, where the ill consequences of its presence will be of less moment" (Theobald). Fuchs advises paracentesis of the cornea for the purpose of producing a sudden diminution of intraocular tension, followed by an influx of blood which may push the embolus forward.

In thrombosis of the central vein, energetic catharsis followed by potassium iodide is advised, but treatment is of little avail.

In retinitis pigmentosa, the eyes should be used very moderately. Refractive, accommodative, and muscular anomalies should be corrected. Galvanism, strychnine and potassium iodide are recommended, but any benefit from their use is apt to be only transitory.

Retinochoroiditis.—See Choroiditis.

Retrobulbar Neuritis.—L. *re'tro*, back + *bul'bus*, bulb. See Optic Neuritis.

Sarcoma Conjunctivæ.—Gr. σάρξ, σαρκός flesh + -ωμα tumor. See Conjunctival Tumors.

Orbital.—See Orbital Tumors.

Scars of the Cornea.—See Cornea, Opacities of the.

Sclera, Inflammation of the.—L. *inflamma're*, to set on fire. See Episcleritis, and Scleritis.

Protrusion of the.—Gr. σκληρός hard. See Sclera, Staphyloma of the.

Staphyloma of the.—Gr. σκληρός hard; σταφυλός a bunch of grapes. Local or general protrusion of the sclera, anteriorly, equatorially, or posteriorly, in the latter case not visible, but inferred from the presence of a high grade of myopia (*q.v.*, under Refractive Anomalies) .

Etiology.—Chronic glaucoma (*q.v.*), scleral inflammation, traumatism, and new-growths, malignant, syphilitic, or tuberculous.

Prognosis.—In untreated cases of anterior and equatorial staphyloma, ultimate loss

of sight results from increased intraocular tension.

Treatment.—Do an iridectomy if the intraocular tension is increased (see Glaucoma). Remove the eye if it is useless (see Enucleation).

Scleritis, Deep.—Gr. *σκληρός* hard + *-ιτις* inflammation. Scleritis is characterized by a bluish-red injection of the sclera presenting focal or diffuse elevations. The cornea, uveal tract, and other parts of the eye become or are primarily involved in the inflammation (in distinction to episcleritis, *q.v.*), so that the prognosis is grave. Thinning and ectasiæ follow cicatrization.

Etiology.—Rheumatism; gout; gonorrhœa; menstrual disorders; exposure to cold; syphilis; tuberculosis.

Treatment.—This is the same as that of Episcleritis (*q.v.*).

Scleritis, Subconjunctival.—See Episcleritis.

Superficial.—See Episcleritis.

Scotomata.—Gr. *σκότωμα*, from *σκότος* darkness. A scotoma is a blind or partially blind area in the visual field. It is called positive if it is perceptible to the patient as a dark spot, negative if it is not perceptible.

Causes.—Focal retinitis or choroidoretinitis; senile changes; retrobulbar neuritis (toxic amblyopia); opacities in the cornea, lens, and vitreous.

Opacities in the refracting media and in the retina (exudate or hemorrhage in the retina) cause positive scotomata.

Scintillating scotoma or teichopsia (Gr. *τεῖχος* wall + *ὄψις* vision) is a luminous appearance before the eyes with a zigzag outline, and often foreruns an attack of migraine. It is also called fortification spectrum.

Scrofulous Ophthalmia.—L. *scrofúla*, sow pig; Gr. *ὀφθαλμός* eye. See Conjunctivitis Phlyctenulosa.

Sebaceous Cyst, Orbital.—L. *seb'um*, suet; Gr. *κύστις* cyst. See Orbital Tumors.

Seclusio Pupillæ.—L. See under Iritis.

Second Sight.—See Cataract.

Serous Iritis.—L. *ser'um*, whey. See Iritis.

Cyclitis.—See Uveitis.

Short-Sightedness.—See Myopia, under Refraction Anomalies.

Sight, Far.—See Hypermetropia, under Refraction Anomalies.

Lost.—Amaurosis; see Blindness.

Near.—See Myopia under Refraction Anomalies.

Old.—See Accommodation Anomalies.

Second.—See Cataract.

Short.—See Myopia under Refraction Anomalies.

Weak.—Amblyopia; see Blindness.

Simple Conjunctivitis.—See Conjunctivitis Catarrhalis.

Sixth or Abducens Nerve, Paralysis of the.—See Muscular Anomalies.

Snow-Blindness.—See Amblyopia and Amaurosis without Ophthalmoscopic Change.

Softening of the Cornea.—See Keratomalacia.

Spasm, Accommodation.—Gr. *σπασμός*. See Accommodation Anomalies.

Ciliary.—See Accommodation Anomalies.

Eyelid.—See Blepharospasm.

Muscular.—See Muscular Anomalies.

Sphincter Pupillæ, Paralysis of the.—Gr. *σφιγκτήρ* binder; L. *pupil'la*, girl. See Mydriasis.

Spring Catarrh.—See Conjunctivitis Vernalis.

Squint.—See Muscular Anomalies.

Squirrel Plague Conjunctivitis.—See Conjunctivitis Tularensis.

Staphyloma of the Cornea.—See Cornea, Staphyloma of the.

Sclera.—See Sclera, Staphyloma of the.

Stenosis of the Canaliculi.—Gr. *στένοσις* narrowing. See Epiphora.

Nasal Duct.—See Dacryocystitis.

Puncta Lacrymalia.—See Epiphora.

Stones, Tear.—See Epiphora.

Strabismus.—Gr. *στραβίσμός* squint. See Muscular Anomalies.

Strain, Eye.—See Asthenopia.

Stricture.—L. *strictúra*. See Stenosis.

Strumous Conjunctivitis.—L. *strúma*, scrofula. See Conjunctivitis Phlyctenulosa.

Stye.—See Hordeolum.

Subconjunctival Scleritis.—L. *sub*, under. See Episcleritis.

Subluxation of the Lens.—L. *sub*, under + *luxátio*, dislocation. See Dislocation of the Lens.

Subperiosteal Abscess.—See Orbital Periostitis and Osteitis.

Superficial Scleritis.—See Episcleritis.

Superior Oblique Muscle, Paralysis of the.—L. *supe'rior*, higher; *obliq'uus*, slanting. See Muscular Anomalies.

Rectus Muscle, Paralysis of the.—L. *rectus*, straight. See Muscular Anomalies.

Suppressed or Latent Squint.—See Muscular Anomalies.

Suppurative Iridochoroiditis.—L. *sub*, under + *pus*, *púris*, pus. See Panophthalmitis Purulenta.

Symblepharon.—Gr. *σύν* together + *βλέφαρον* lid. Adhesion of the lid to the

eyeball, the result of purulent, croupous, diphtheritic, or trachomatous conjunctivitis, burns, pemphigus, traumatism, or rarely a congenital anomaly. The treatment is operative.

Sympathetic Ophthalmia.—Gr. *σύν* with + *πάθος* disease; *ὀφθαλμός* eye. Inflammation of the uveal tract of one eye, originating from traumatic inflammation of the uveal tract of the other eye. It usually sets in about two to eight weeks after the onset of the disease in the injured eye, almost never before the expiration of two weeks. It is ushered in by photophobia, lachrymation, blurring of the vision for near work, and the occurrence of tender spots in the ciliary region, which may be picked out with the end of a probe (De Schweinitz). Then a pericorneal zone of injection appears, etc. (see Iritis). The disease may eventually subside, or the eye may finally be destroyed. "The patient cannot be considered cured, however, until at least a year has elapsed." (De Schweinitz).

Preventive Treatment.—An eye with a penetrating wound in the ciliary region or containing an irremovable foreign body should be removed.

Remedial Treatment.—Enucleate (*q.v.*) the offending fellow-eye only if the latter is blind or practically so, but not if there is a possibility of the retention of a "useful degree of vision" in this eye, for the exciting eye may, in the end, prove the most serviceable eye.

Absolute rest and darkness should be enjoined. Six to ten leeches or the artificial Heurteloup leech may be applied to the temple, and hot fomentations to the lids. Heat is a valuable agent for promoting the reaction of inflammation. Atropine gr. ii–iv to the ounce of boiled water, one drop in the eye once or twice a day, or often enough to keep the pupil dilated, may be used guardedly, and discontinued if the intraocular tension should increase (see Glaucoma). "Dionin, 5 per cent., should be used," one drop in the eye, t.i.d. (De Schweinitz); also subconjunctival injections of cyanide of mercury, 1 : 4000, 10 to 20 minims.

Open the bowels thoroughly in the beginning with calomel, and administer mercury liberally by mouth and inunction, or sodium salicylate in large doses, or quinine freely; and later, after the acute symptoms have subsided, prescribe potassium iodide (for drug formulæ, etc., see Part 11).

Nutritious food, fresh air, and tonics, if indicated, are of importance.

Synechia Iridis.—Gr. *συνέχεια* connexion; Gr. *ἶρις* a rainbow or halo. Adhesion of the iris to the cornea or to the lens (see Iritis).

Tarsal Cyst.—Gr. *ταρσός* foot; *κύστις* cyst. See Chalazion.

Tarsitis.—Chronic (rarely acute) inflammation of the tarsus with thickening.

Etiology.—Syphilis (the commonest cause); blepharitis; conjunctivitis; trachoma.

Treatment.—Treat the condition locally as in blepharitis (*q.v.*) and constitutionally as indicated.

Teardrop.—See Epiphora.

Tear-Duct Disease.—See Dacryocystitis.

Gland Disease.—See Dacryoadenitis and Orbital Tumors.

Sac Disease.—See Dacryocystitis.

Tears, Overflow of, Abnormal.—See Epiphora.

Tearstones.—See Epiphora.

Teichopsia.—Gr. *τεῖχος* wall + *ὄψις* vision. See Scotomata.

Tension, Ocular.—See the Ocular Examination in the Appendix, following Part 6.

Tests, Ocular.—See the Ocular Examination in the Appendix, following Part 6.

Third Nerve or Oculomotor Paralysis.—See Muscular Anomalies.

Toxic Amblyopia.—Gr. *τοξικόν* poison; *ἀμβλύς* dull + *ὤψ* eye. **Causes.**—Tobacco and ethyl alcohol (the commonest causes; producing central scotomas for red and green); quinine (producing spasm of the vessels of the retina and optic nerve); methyl or wood alcohol (Columbian spirits, Jamaica ginger, bay rum, shellac, etc.); lead; felix mas; salicylic acid; pomegranate-root bark; stramonium; chloral; iodoform; iodides; thiuret; thyreoidin; carbon disulphide; aniline; nitrobenzol; arsenic; atoxyl; cannabis indica; silver nitrate; potassium chlorate; mercury; antipyrine; osmic acid; opium; optochin; ptomaines (may also cause paralysis of the intrinsic and extrinsic eye muscles); coffee; tea; diabetes; uræmia; intestinal parasites; shock; etc. (see also Optic Neuritis, Optic Atrophy and Retinitis).

Treatment.—Attend to the cause. Promote elimination of the poison by means of purgation, copious water drinking, and diaphoresis, the latter practiced every day or every other day by means of the Turkish bath, or the hot-air bath, using a lamp and two chairs covered with rubber sheeting, or hot bricks surrounding the patient beneath blankets, the bricks being covered with wet cloths sprinkled with alcohol, and the hypodermic injection of pilocarpine, gr. ⅛ twice a week. Potassium iodide (see Part 11) may be of service as an eliminant.

Strychnine is advised in ascending doses,

beginning with gr. $\frac{1}{30}$, hypodermically, t.i.d., and increasing the dose until muscular twitching occurs, then continuing for several weeks one-fourth of the toxic dose. Strychnine should not be given, however, if active inflammation is present.

Nutritious food, fresh air, and tonics, if indicated, are of importance.

In quinine blindness, prescribe nitroglycerine and inhalations of amyl nitrite followed by ascending doses of strychnine (see Drugs, Part 11).

In lead poisoning, small doses of magnesium sulphate are administered, besides the eliminative measures above described.

Prognosis.—If taken in time, the prognosis is usually good, but optic atrophy is a possible consequence in some cases. In tobacco and ethyl alcohol amblyopia, a cure may usually be expected in from one to three months. Optic atrophy is apt to follow poisoning with wood alcohol.

In quinine blindness, vision is usually restored in several hours or days, but atrophy may result.

In lead poisoning, the outlook is favorable in early cases, but not when optic neuritis and atrophy have set in.

Toxic Conjunctivitis.—See Conjunctivitis, Toxic.

Trachoma.—See Conjunctivitis Trachomatosa.

Tract, Optic.—See Optic Chiasma, Tract, and Centres.

Traumatism, Ocular.—Gr. *τραῦμα* wound; L. *ŏculus*, eye. See Injuries of the Eye.

Trichiasis.—Gr. *τριχίασις*; *θρίξ* hair. A turning inward of the eyelashes against the eyeball. A rare congenital anomaly is the presence of two rows of cilia (distichiasis (Gr. *δίς* twice + *στίχος* row), with the posterior row directed backward.

Etiology.—Cicatricial contraction, due to trachoma, diphtheria, pemphigus, conjunctival burns, traumatism, etc.; blepharitis; styes; bandaging the eye after operations; blepharospasm.

Treatment.—Where only a few cilia are misdirected, they may be extracted by means of epilation forceps as often as necessary; or better, the cilium follicles may be destroyed by electrolysis. Under local cocaine anæsthesia (5 per cent.), with the positive plate (wet sponge) of a galvanic battery on the temple, introduce the negative pole in the form of a fine sewing needle, into the follicle down to its base. Then close the circuit. After an action of about one minute, using a current of from $\frac{1}{4}$ to $1\frac{1}{2}$ + milliampères, the cilium should be easily drawn out. The current should be increased and broken off slowly, to avoid dizziness. The part should be cleansed with alcohol both before and after the operation. Do not re-insert the needle in the same papilla at the same sitting, and avoid neighboring cilia at one sitting. The patient should apply hot boric acid solution (3 per cent.) for several minutes two or three times daily during the ensuing two days. After the reaction has subsided, *i.e.*, after several days or a week, the operation may be repeated. Remember that the careless use of electrolysis produces disfiguring scars.

Snellen's operation may sometimes be preferred.

In extensive cases an entropion operation is demanded (see also Entropion).

Trochlear Nerve Paralysis.—L. *tro'chlea*, pulley. See Muscular Anomalies.

Tuberculosis of the Conjunctiva.—See Conjunctival Tuberculosis.

Tumors of the Conjunctiva.—See Conjunctival Tumors.

Orbit.—See Orbital Tumors.

Tylosis.—Gr. *τύλος* knot: a callosity. See Blepharitis Marginalis.

Ulcer of the Cornea.—See Keratitis Ulcerosa.

Unequal Pupils.—See Anisocoria.

Uveitis.—L. *u'vea* + Gr. *-ιτις* inflammation. Inflammation of the uveal tract, consisting of iris, ciliary body, and choroid, forming the pigmentary layer of the eye (irido-choroiditis, practically synonymous with serous cyclitis, serous iritis, descemetitis, and keratitis punctata; consult Iritis, for symptomatology, etiology, and treatment).

Vernal Conjunctivitis.—See Conjunctivitis Vernalis.

Vertigo.—(See Part 1, General Medicine and Surgery.

Vesicular Keratitis.—See Keratitis Vesiculosa.

Vision, Acuteness of.—See the Ocular Examination, in the Appendix, following Part 6.

Dimness of; Amblyopia.—L. *vis'io;* Gr. *ἀμβλύς* dulled + *ὤψ* eye. See Blindness.

Disturbances of, without Ophthalmoscopic Change.—See Amblyopia and Amaurosis without Ophthalmoscopic Change.

Double.—See Diplopia.

Fields of.—See the Ocular Examination, in the Appendix, following Eye Diseases.

Loss of; Amaurosis.—Gr. *ἀμαυρόειν* to darken. See Blindness.

Obscured or Weak; Amblyopia.—Gr. *αμβλύs* dulled + *ὤψ* eye. See Blindness.

Tests of.—See the Ocular Examination, in the Appendix, following Part 6.

Vitreous, Hemorrhage into the.—See Hemorrhage into the Vitreous.

Opacities in the.—See Opacities in the Vitreous.

Weak Sight, Amblyopia —Gr. *ἀμβλύs* dulled + *ὤψ* eye. See Blindness.

Wounds, Ocular.—L. *oc'ulus*, eye. See Injuries of the Eye.

Xerophthalmos.—See Xerosis, below.

Xerosis; Xerophthalmos.—Gr. *ξηρόs* dry + *ὀφθαλμόs* eye. Dryness of the conjunctiva or cornea.

Causes.—Scarring of the conjunctiva follow-trachoma, burns, croupous or diphtheritic inflammation, pemphigus, traumatism, etc.; ectropion; lagophthalmos; malnutrition (see Nyctalopia); keratomalacia.

Treatment.—Correct any remediable causal influence. In incurable cases, employ milk, glycerine, codliver oil emulsion, or mucilage of acacia or tragacanth, for the purpose of diminishing the sense of dryness.

APPENDIX

Schema for the Ocular History and Examination

No.

Name *Address* *Date*
Single *Married* (how long) *Widow* (how long) *Occupation*
No. and ages of children *Age* *Race*
Complaint and history of Present Illness *General appearance*

Height Weight
Appropriate or proper weight (*q.v.* in Part 1).
Hygiene: Rest Exercise
Recreation Diet Sleep
Bowels Ventilation Baths
Sexual habits Tea and coffee
Narcotics Alcohol Tobacco

Previous Ocular and General History

Family History
Examination (see below)

Lids
Scleræ
Orbits
Anterior Chambers
Pupillary reaction to light and accommodation and consensual light reflex
Visual acuity
Accommodation (using Jæger's type)
Ciliary borders
Corneæ
Irides
Eyeballs
Visual fields
Ophthalmoscopic picture
Light sense
Other Organs and tissues (ears, nose, mouth, throat, heart, blood vessels, kidneys, lungs, etc.)
Conjunctiva
Lachrymal apparatus
Tension
Mobility of globes
Balance of the external eye-muscles (see Muscular Anomalies)
Color sense (see Color Blindness)

Diagnosis:
Treatment (including dates and whether at office or home):

The Ocular Examination.—Examine the cornea, anterior chamber (depth, pus, blood), iris and lens, etc., by means of oblique illumination in a darkened room. Place a lamp about two feet to the side and somewhat in front of the patient. With the right hand, focus the light upon the eye by means of a biconvex lens of two or three inch focal distance, and examine the eye through a magnifying lens of the same focal distance, or through a Jackson or Berger binocular loupe.

The presence of senechiæ is shown by the appearance of pupillary irregularity on the instillation of a transient mydriatic, such as homatropine or euphthalmine, (see Part 11).

The sensibility of the cornea is tested by means of a wisp of cotton twisted to a point.

The fields of vision for both light and color are measured by means of a self-registering perimeter. Look for concentric contraction, unilateral contraction, hemianopia, reëntering angles, and scotomata. A rough test may be made in the following manner: The physician s ts directly facing the patient, about three feet away. If the patient's right eye is to be tested his left eye and the physician's right eye are closed. Both look directly into each other's open eyes. Then the examiner slowly moves his shaking finger inward, at an equal distance between himself and the patient, and tells the patient to indicate by saying "Now," when the finger is first seen. If this occurs at the same instant that the finger is seen by the examiner, the patient's field of vision is normal. The normal order for color perception is, from without inward, blue, yellow, red, and green.

To test the acuteness of vision, place the patient twenty feet from Snellen's test card.

$$\text{Visual acuteness} = \frac{\text{20, or the distance of the point from the card}}{\text{No. of type, which is the distance at which it should be read.}}$$

Test each eye separately. If the largest type cannot be read at any distance, ascertain the distance at which the patient can count fingers. If the vision is too poor for this test, see if the moving hand can be detected. If not, test for light perception

Test near vision or accommodation by means of Jaeger's test types, testing each eye separately. J. No. 1 = type No. 1 read at the usual reading or sewing distance.

The light sense is tested by means of

Förster's photometer. The patient should remain for ten minutes with the eyes bandaged in a perfectly dark room before making the test. The object of the test is to determine the smallest amount of light that will render an object just visible.

Corneal inequalities are detected by means of Placido's disc or keratoscope, or by the appearance of broken images of the window bars on moving the cornea in different directions. In using the keratoscope, place the patient with his back to the light, and hold the instrument 30 cm. from the eye. Look through the central aperture and note if the reflections of the circles from the cornea are broken or distorted.

Ocular tension is recorded as follows: Tn = tension normal; T + 1, + 2, + 3 = degrees of high tension; T — 1, — 2, — 3 = degrees of low tension; T ? = tension doubtful.

Look for opacities in the several media by means of the ophthalmoscope.

In using the pupillometer make the measurements under a uniformly strong light.

The Ocular Armamentarium.—1. Office and Operating Room Equipment.—Argand gas burner or oil lamp mounted upon a hinged bracket; glass or metal fountain syringe, with bulbous tipped nozzle for irrigating the conjunctival sac; Llewellyn's flask for sterilizing collyria; hypodermic syringe; Sweet's skiagraphy apparatus for localizing foreign bodies in the eye; magnet: Johnson's, Haab's; galvanic battery and electrolytic needles; high-frequency current; Maddox rod; Risley's rotary prism; trial case of lenses for testing the refraction of the eyes; spectacle frames for placing test lenses before the eyes; ophthalmometer for measuring the amount of corneal astigmatism; phorometer for measuring muscular insufficiency or heterophoria; amblyoscope; Stevens's tropometer; colored worsteds for testing the color sense; stereoscope; esophoric and exophoric prisms; Placido's disc or keratoscope; ophthalmoscope; water distiller; funnel; filter paper; soft camel's-hair brush; adhesive plaster; absorbent cotton; pupillometer; self-registering perimeter; Förster's photometer; biconvex lenses of two or three inch focal distance; Jackson's or Berger's binocular loupe; cream-colored test-type card of Snellen; Jaeger's test-types; scales for weighing drugs; cilium forceps; Knapp's lid-clamp; Desmarre's clamp; Graefe linear cataract knife; chalazion clamp; fine scalpel; fine needles and needle-holder; fixation forceps; lid plate; scissors: enucleation, iris, curved, straight, and strabismus; spring speculum; strabismus hooks; vulcanite spatula; Knapp's roller forceps; silver probe; chalazion curette; narrow-bladed Sichel cataract knife; hand nasal atomizer for spraying nose; Noyes's trachoma forceps; Rust's trachoma forceps; three-bladed scarifier; grattage forceps; lance-knife; spud and needle for removing foreign bodies; paracentesis needle; galvanocautery with set of eye-tips; tattooing needles for corneal scars; evisceration scoop; Beer's knife; dissecting forceps; curved iris forceps; Mathieu's iris forceps; grooved spatula and probe; Tyrrell's blunt hook; De Wecker's pince-ciseaux; stenopœic glasses; hydrodiascope; gold or silver pin for opening a stenosed lachrymal point; cystotomes, right and left; Daviel's spoon; wire loop curved like a spoon; discission or knife needle; Prince's advancement forceps; canaliculus knives, beak-pointed and probe-pointed; lachrymal probes, Theobald's and Bowman's; lid retractors, solid and hollow; ring forceps; Heurteloup's artificial leech; fine silk thread and needles; wooden toothpicks; Anel's lachrymal syringe; keratome; syringe for removing soft cataract by suction; irrigating bottle; tinted goggles; eye-shades; Buller's shield or watch crystals; bulbous-tipped eye-droppers; Ziegler's canaliculus dilators; capsule forceps; Tyrrell's sharp hook for tearing the capsule; iris spatula; cross-bar entropion forceps; Wilder's double knife; artificial eyes; Thomas's stricturotome; Stilling's stricturotome; Elliott's trephine; curved, flat scissors; Prince's roller expression forceps; Dewey's trachoma burr; Darier's forceps; horn spatula; ionic outfit: galvanic battery with milliampèremeter, copper and zinc electrodes; Knapp's loop; Stevens's hook; Smith's spatula; Prince's pasteurizer for heating corneal ulcers; adhesive plaster.

2. Laboratory Equipment.—Microscope; slides; cover glasses; stains: saturated aniline water, filtered; saturated alcoholic solution of gentian violet; iodine; potassium iodide; alcohol, 95 per cent.; safranin; alcohol lamp or Bunsen burner; drug scales; spatulas; mortar and pestle; capsules. Urinary Analysisoutfit (see Appendix to Part 1).

3. Internal Drugs Mentioned in the Text.—(a) Tonics and Alteratives (L. *to'nus*, tone; *alterar'e*, to change).—Quinine; elixir ferri, quininæ et strychninæ phosphati; syr. ferri iodidi; hypophosphites; Fowler's solution; codliver oil; strychnine; potassium iodide; sodium salicylate; merc. protiodide; Donovan's solution; hydrarg. salicylate; hydrarg. biniodide; tr. nucis vomicæ.

(b) Purgatives (L. *purga're* to cleanse).—Castor-oil; calomel; magnesium sulphate;

sodium sulphate; sodium phosphate; Rochelle salt.

(c) NEUROMUSCULAR SEDATIVES (L. *sed'o*, I allay).—Ext. opii; morphine; tr. hyoscyami; chloretone; croton chloral hydrate; potassium bromide; ext. belladonna; alcohol; ether; antipyrine; brandy; whiskey; tr. aconite; conium; fl. ext. gelsemii; aspirin.

(d) HÆMOSTATICS (Gr. *αἷμα* blood + *στατικός* standing).—Ergot.

(e) VASODILATORS (L. *vas*, vessel).—Nitroglycerine; amyl nitrite.

(f) ANTILITHICS (Gr. *ἀντί* against + *λίθος* stone).—Cream of tartar; colchicum; lithium salicylate; colchicine; linden flower or elder tea.

4. Local Preparations Mentioned in the Text.—(a) ANTISEPTICS AND ASTRINGENTS (Gr. *ἀντί* against + *σήψις* putrefaction; L. *ad*, to + *strin'gere*, to bind).—Zinc sulphate; boric acid; sodium biborate; argyrol; protargol; silver nitrate; sodium chloride; mercury bichloride; glycerol of tannin, gr. x ad ℥i; tannin; ung. hydrarg. nitratis; potassium permanganate; mercury cyanide; formaline; alum crystals; copper sulphate crystals; copper citrate; white precipitate; iodoform; hydrarg. oxidi flavi; boroglyceride; carbolic acid; tr. iodi; Dobell's solution; ichthyol; soda bicarbonate; blue ointment; aluminum acetate; lotio nigra; calamine lotion; sodium carbonate; collyrium astringens luteum or Horst's eye water; compound iodine ointment; liq. plumbi subacetatis; Haab's discs or rods of iodoform; Finsen (ultra violet) rays for tuberculosis of the conjunctiva; castile soap.

(b) CAUSTICS (Gr. *καίειν* to burn).—Carbolic acid; trichloracetic acid; silver stick; hydrochloric acid, c.p.; copper sulphate pencils; alum pencils; copper citrate; liq. potassæ.

(c) STYPTICS (Gr. *στύφειν* to contract).—Adrenalin, 1 : 1000.

(d) MYDRIATICS (Gr. *μυδρίασις*).—Atropine; cocaine; homatropine hydrobromide; euphthalmine hydrochloride; eumydrin; hyoscyamine hydrobromate; duboisine sulphate; daturine; scopolamine hydrobromide.

(e) MIOTICS (Gr. *μύειν* to close).—Pilocarpine hydrochloride; eserine sulphate or salicylate.

(f) ANALGESICS (Gr. *ἀν* neg. + *ἄλγος* pain).—Cocaine; holocaine hydrochlorate; alypin; chloroform; spt. camphoræ; aq. camphoræ; spt. lavendulæ; camphor; ol. menth. pip.

(g) EMOLLIENTS AND PROTECTIVES (L. *emol'lio*, I soften).—Ung. aquæ rosæ; yellow wax; glycerine; lanolin; vaseline; refined codliver oil; brown or unrefined codliver oil; collodion; albolene; olive or cottonseed oil; ung. zinci oxidi; emulsion of codliver oil.

(h) SKIN MEDICAMENTS.—Salicylic acid; diachylon ointment; starch powder; pix liquida; oil of cade; lanolin; vaseline.

(i) LYMPHAGOGUE (L. *lym'pha*, lymph + Gr. *ἄγω* I carry off).—Dionin.

(j) COUNTER-IRRITANT.—Cantharidal collodion.

Miscellaneous.—Flesh-colored, water-color paint; antigonococcus serum; diphtheria antitoxin; tuberculin; neutral ammon. tartrate; dilute acetic acid; jequiritol (Römer); jequiritol serum (Merck); distilled water; fluorescein, Grübler's; liq. potassæ; India ink; ammonium chloride; sodium pyrophosphate; thiosinamin ung., 15 per cent.

PART 7

EAR DISEASES

Abscess, Auricular.—L. *absceśsus*, a going apart; *auric'ula*, the pinna. See Perichondritis Auriculæ.

Brain.—See under Otitis Media Purulenta; Labyrinthitis, and Mastoiditis Interna.

Epidural.—Gr. ἐπί on + L. *dur'a*, hard. See Abscess, Brain, above.

External Auditory Canal.—L. *audir'e*, to hear; *canal'is* canal. See Otitis Externa Circumscripta Acuta.

Extra-Dural.—L. *ex'tra*, outside. See Abscess, Brain, above.

Acoustic Nerve Inflammation.—Gr. ἀκούειν to hear; νεῦρον nerve; L. *inflammar'e*, to set on fire. See Acoustic Nerve Paralysis, below.

Acoustic Nerve Paralysis.—Gr. παρά beside + λύειν to loosen. The symptoms of acoustic nerve disease are as follows, viz: labyrinthine or nerve deafness, partial or complete (see Deafness), and tinnitus (cochlear symptoms); nausea, dizziness, staggering gait, and nystagmus (vestibular symptoms). The nystagmus is rotary and horizontal (see Nystagmus, for important desiderata). The cochlear symptoms in auditory neuritis are usually the first to appear. The onset in neuritis is sudden, and the symptoms vary in degree from day to day.

Etiology.—(1) Neuritis.—Syphilis (the commonest cause); influenza; scarlet fever; typhoid fever; rheumatism; polyneuritis; meningitis; tuberculosis; alcoholism; quinine; salicylates.

(2) Atrophy.—Neuritis; aneurysm of the basilar artery; tumor in the cerebello-pontine fissure; hydrocephalus; contraction of the basilar and internal auditory arteries; meningitis; purulent ependymitis; hemorrhage or inflammation in the region of the nucleus and roots of the acoustic nerve; otosclerosis; long-continued pressure on the labyrinth in chronic otitis media; professional sound concussion; tabes dorsalis; nephritis; marasmus; senility.

(3) Functional Paralysis.—Hysteria; angioneurosis (an exceedingly rare, transitory acoustic paralysis, "characterized by sudden pallor of the face, nausea, dizziness, tinnitus, and hardness of hearing, which disappear entirely within a few minutes with the return of the former normal color of the face, and without leaving the slightest disturbance of hearing.") (Politzer.)

Treatment.—Attend to the cause. In acoustic neuritis, enjoin rest and freedom from noise. Promote the elimination of toxines by means of purgation, copious water drinking, and diaphoresis, the latter practiced every day or every other day by means of the Turkish bath; or the hot air-bath, using a lamp and two chairs covered with rubber sheeting; or hot bricks surrounding the patient beneath blankets, the bricks being covered with wet cloths sprinkled with alcohol; and the hypodermic injection of pilocarpine, gr. $\frac{1}{8}$, twice a week, or gr. $\frac{1}{8}$–$\frac{1}{6}$ by mouth, twice or thrice daily, the dose or its frequency to be increased until a slight increase of perspiration and saliva occurs, the physiological dose being continued, if necessary, for two months or longer. (Dench.) Potassium or sodium iodide is a useful eliminant. Tincture of iodine, or vesicants or six to ten leeches, or the artificial Heurteloup leech to the mastoid process, and mustard foot-baths are advised (for drugs, vesicants, etc., see Part 11),

After all inflammatory symptoms have subsided and tinnitus is absent, strychnine may be prescribed in ascending doses, beginning with gr. $\frac{1}{30}$, hypodermically, t.i.d., and increasing the dose until muscular twitching occurs, then continuing for several weeks one-fourth of the toxic dose.

Nutritious food, fresh air, and tonics, if indicated, are of importance.

In angioneurotic paralysis, Politzer has employed galvanization of the sympathetic nerve of the neck for several months with success.

Acoustic Neuritis.—See Acoustic Nerve Paralysis, above.

Paralysis.—See Acoustic Nerve Paralysis, above.

Adhesions of the External Auditory Canal.—See Stricture of the External Auditory Canal.

Aids to Hearing, Artificial.—See under Otitis Media Catarrhalis Chronica, and Otitis Media Purulenta Chronica.

Anæmia of the Labyrinth.—Gr. ἀν neg. + αἷμα blood; λαβύρινθος.—**Causes.**—(a) General Anæmia (see Part 1, on General Medicine and Surgery, for its many causes).

(b) Local Anæmia or Ischæmia, due to angiospasm (extremely rare); obstruction of the internal auditory artery, as in aneurysm of the basilar artery, neoplasms growing into

the internal meatus, and embolism and sclerosis of the artery; chronic otitis media, in which pressure is exerted upon the labyrinthine structures through the round and oval windows.

Symptomatology.—In acute anæmia, as in cases of sudden severe hemorrhage and in the angioneurotic form, there occur marked facial pallor, marked tinnitus, deafness, dizziness, nausea or vomiting, and perhaps fainting. In the very rare angioneurotic form, these symptoms disappear entirely within a few minutes.

In chronic anæmia, tinnitus and deafness are the main symptoms. The deafness is, of course, labyrinthine, that is, it is especially marked for high-pitched and sharp sounds, and bone conduction is reduced (see Tests).

An improvement in the symptoms following the administration of amyl nitrite (Part 11) is of diagnostic significance.

Treatment.—Attend to the cause (consult Part 1 on General Medicine and Surgery). In angiospasm, Politzer has employed galvanization of the sympathetic nerve of the neck for several months with success.

Apoplexy, Labyrinthine.—Gr. *ἀποπληξία.* See Labyrinthine Hemorrhage.

Artificial Aids to Hearing.—L. *ars,* art + *fac'ere,* to make. See under Otitis Media Catarrhalis Chronica; and Otitis Media Purulenta Chronica.

Atresia of the External Auditory Canal.—Gr. *a* neg. + *τρήσις* a boring. Imperforation or absence or complete closure of the canal, as distinguished from partial closure (for which see Stricture).

Etiology.—Atresia is either congenital or acquired. Acquired atresia is produced by the apposition of denuded surfaces or granulations due to traumatism (including fractures, and poorly performed mastoid operations), burns, cauterizations, extension from without of a phlegmonous inflammation, ulcerations, chronic suppurative otitis media, caries and necrosis of the mastoid process and walls of the meatus.

Treatment.—Congenital atresia is usually associated with rudimentary or absent internal structures, so that in such cases, even if an artificial meatus could be successfully formed, which is very exceptional, the operation would be futile. Therefore, before an operation is attempted, wait until the patient is old enough to make it possible to ascertain if the internal ear is functionally intact (see Examination of the Ear).

An artificial canal is made as follows: Make a curved incision just behind the attachment of the pinna, which is usually deformed (see Congenital Malformations of the Auricle), through the skin and periosteum to the bone, and turn the flap, including the periosteum, forward. Then search for a rudimentary meatus, which if found should be enlarged by means of chisels or burrs, the latter driven by an electric motor or dental engine. If no rudimentary meatus is found, make a canal where a normal canal should be. In either case, take great care not to injure important adjacent structures. After forming a canal, make a crucial incision in the overlying portion of the skin and periosteal flap, and when the latter has been replaced, insert into the canal the four small triangular flaps thus formed, and insert a gauze pack to maintain the four flaps in position. After a few days, replace the gauze packing with an aluminum or rubber tube. Dench suggests "Thiersch's method of skin grafting as soon as healthy granulations spring up," in order, if possible, to prevent cicatricial contraction of the canal. The patency of an artificial canal can hardly be maintained.

Acquired atresia is usually fibrous, rarely bony. Probe carefully to ascertain which variety is present, and if the former, whether it is a membranous septum or a diffuse growth. Siegle's speculum will help in the differentiation. Test the hearing (see Examination). "In those cases in which whispered speech is understood through the hearing trumpet (the latter is employed to obviate cranial bone transmission), it is quite probable that the septum is very thin." Operative removal of the atresia in such cases is justifiable. "In those patients, however, where speech is not understood by the aid of the hearing trumpet, in other words, where we are dealing with an extensive atresia, the operative procedure of cutting through the same (with knife or galvanocautery), and the introduction of cannulas, as well as leaden plugs, remain fruitless." (Knapp.)

In the latter instances, and also in osseous atresias, one may resort to Jansen's operation, as described under Stricture of the External Auditory Canal, provided the auditory nerve is intact, as ascertained by the tuning fork tests (see Examination), and the tympanum is not involved, as ascertained by observing whether, by auscultation and eustachian catheterization (*q.v.*), air can be heard to enter the tympanic cavity.

Auditory Canal, External.—See External Auditory Canal.

Neuritis.—L. *audir'e,* to hear; Gr. *νεῦρον* nerve + *-ιτις* inflammation. See Acoustic Nerve Paralysis.

Auditory Paralysis.—See Acoustic Nerve Paralysis.

Aural Catarrh, Acute.—L. *au'ris*, ear; Gr. καταῤῥεῖν to flow down. See Otitis Media Catarrhalis Acuta.

Chronic.—See Otitis Media Catarrhalis Chronica.

Cerumen.—L. *ceru'men*, ear-wax. See Wax, Inspissated.

Cholesteatoma.—Gr. χολή bile + στέαρ fat + -ωμα tumor. See under Otitis Media Purulenta Chronica.

Eczema.—See Eczema Auris.

Examination.—L. *au'ris*, ear. See Examination of the Ear.

Exostoses.—See Exostoses and Hyperostoses of the External Auditory Canal.

Fistula, Congenital.—L. *fis'tula*, pipe. See Auricle, Congenital Malformations of the.

Foreign Bodies.—See Foreign Bodies in the Ear.

Furunculosis.—L. *furun'culus*, boil. See Otitis Externa Circumscripta Acuta.

Granulations.—See Aural Polypi and Granulations.

Hæmatoma.—See Hæmatoma Auris.

History.—See Schema for the Aural History and Examination, in the Appendix, following Part 7.

Hyperostoses.—See Exostoses and Hyperostoses of the External Auditory Canal.

Aural Polypi and Granulations.—L. *au'ris*, ear; Gr. πολύς much + πούς foot; L. *gran'ulum* grain. An inflammatory polypus is a pedunculated granulation. Polypi usually have their origin in the tympanic cavity in purulent otitis media; but they sometimes arise in the external auditory canal as a result of chronic otorrhœa, caries, furunculosis, desquamative inflammation, traumatism, or poulticing.

Treatment.—Locate the root of the polypus with a blunt probe curved to a right angle at the end.

If the polypus arises in the external meatus, it may be avulsed, or constricted, or cut off with Blake's cold wire snare, after the canal has been cleansed with bichloride of mercury, 1 : 3000, in equal parts of warm alcohol and water, and anæsthetized with a warm 10 per cent. solution of cocaine or with powdered cocaine applied on the moist end of a probe. In children, a general anæsthetic is required. Hemorrhage is arrested by inserting cotton-wool dipped in powdered alum or in adrenalin solution, 1 : 3000–1000. Then the parts are dried, and the base or stump of each polypus cauterized with chromic acid or silver nitrate fused on the end of a probe by dipping the red-hot probe in the powdered caustic. Then a minute quantity of finely powdered boric acid is insufflated.

Granulations may be cauterized with liquor ferri chloridi or with a 10 per cent. solution of trichloracetic acid, using a probe, or small brush or a ball of cotton-wool, and taking extreme care not to touch any other parts but the granulations, and, in the tympanum, to avoid the promontory (the prominence formed by the first turn of the cochlea). The cauterization should not be repeated until after the crust or eschar has fallen off and is syringed from the ear.

The galvanocautery may be used to remove polypi from the external meatus and drum membrane (not from the tympanum), and is preferred by Politzer to chemical caustics. The parts are first anæsthetized with powdered cocaine applied on the moistened end of a probe. "The circuit should be closed only when the cautery is in contact with the growth; and before each cauterization the point must be thoroughly heated."

Intra-tympanic polypi should not be avulsed for fear of tearing out the ossicles. To remove them, the perforation in the drum membrane may have to be enlarged. Small, soft polypi and granulations may be removed, after cocainization, by means of small sharp spoons, sharp curettes, or ring-knives, the latter being made to encircle the polypus. These instruments are also useful in scraping necrosed bone, which is frequently concealed by large flabby granulations. After curetting, check the resulting hemorrhage with adrenalin, 1 : 1000, applied on a pledget of cotton. Then dry the parts, and cauterize the base or stump of each granulation with silver nitrate or chromic acid fused on the end of a probe.

Polypi in the attic may sometimes be diagnosed by means of a small tympanic mirror, and removed with a small curette bent at a right angle with the handle.

When operative measures are not feasible, or are refused, alcohol instillations may be employed. The alcohol, because of its dehydrating properties, causes the granulations to shrink. First cleanse and dry the ear, then pour in warmed alcohol and water, equal parts. To avoid pain, pour in two or three drops at first, and the rest, about thirty drops, a half to one minute later. Allow it to remain in the ear twenty or thirty minutes. Repeat the instillations two or three times daily, and gradually increase the strength. Boric acid, gr. xx to the ounce, or carbolic acid, gr. xv to the

ounce, may be added. Two to six or more weeks of the alcohol treatment are required to cause the polypi completely to disappear. Alcohol is contraindicated in acute inflammation and in bone caries.

Chronic ear suppuration with the extensive formation of granulation tissue is slowly amenable to radium therapy (*q.v.* in Part 1).

Aural Seborrhœa.—See Seborrhœa Auris.

Vertigo.—See Vertigo in Part 1.

Wax.—See Wax, Inspissated.

Auricle, Abscess of the.—L. *auricula*, the pinna; *abscessus*, a going apart. See Perichondritis Auriculæ.

Auricle, Congenital Malformations of the.—L. *con*, together + *genitus*, born; *malus*, evil + *formatio*, a forming. A plastic operation in infancy may be appropriate in many instances. Where the deformity is great, however, it is better to remove the deformed member entirely, and replace it with an artificial auricle.

In microtia, the external meatus is usually absent, and the internal structures usually either rudimentary or absent, so that the formation of an artificial meatus, even if successful, is usually futile. Before such an operation is attempted, one should wait until the patient is old enough to permit of an examination of the functional capacity of the internal ear (see Atresia of the External Auditory Canal).

For protruding ears in early childhood, strap the ear to the head, or apply collodion to the head and to the apposing posterior aspect of the auricle. In adults, remove an elliptical segment of the posterior auricular integument and approximate the cut edges.

Congenital (blind) fistulæ require no treatment, unless a retention cyst should form as a result of blocking of the orifice of the fistula, when the cyst should be opened and curetted.

Auricle, Eczema of the.—See Eczema Auris.

Hæmatoma of the.—See Hæmatoma Auris.

Inflammation of the.—L. *inflammare*, to set on fire. See Perichondritis Auriculæ.

Malformations, Congenital, of the.—See Auricle, Congenital Malformations of the.

Perichondritis of the.—See Perichondritis Auriculæ.

Bodies, Foreign, in the Ear.—See Foreign Bodies in the Ear.

Boil in the External Auditory Canal.—See Otitis Externa Circumscripta Acuta.

Brain Abscess.—See under Labyrinthitis, Otitis Media Purulenta; and Mastoiditis Interna.

Caloric Test.—L. *calor*, heat. See Examination of the Ear.

Canal, External Auditory.—See External Auditory Canal.

Catarrh, Aural, Acute.—Gr. καταῤῥεῖν to flow down; L. *aur'is*, ear. See Otitis Media Catarrhalis Acuta.

Chronic.—See Otitis Media Catarrhalis Chronica.

Eustachian.—B. Eustachi, d. 1574. See Otitis Media, Catarrhalis Acuta; and Chronica.

Tubo-Tympanic.—L. *tu'ba*, a tube; *tym'panum*, drum. See Otitis Media Catarrhalis Acuta; and Chronica.

Catheterization of the Eustachian Tube.—Gr. καθετήρ. See Inflation of the Middle Ear.

Cerebellar Abscess.—L. *dim.* of *cer'ebrum*, brain. See Abscess, Brain.

Cerebral Abscess.—L. *cer'ebrum*, brain. See Abscess, Brain.

Cerumen, Impacted.—L. *ceru'men*, earwax; *impactus*, closely lodged. See Wax, Inspissated.

Cholesteatoma.—Gr. χολή bile + στέαρ fat + -ωμα tumor. See under Otitis Media Purulenta Chronica.

Chronic Aural Catarrh.—See Otitis Media Catarrhalis Chronica.

Circumscribed Acute External Otitis.—See Otitis Externa Circumscripta Acuta.

Closure of Perforations of the Drum Membrane.—See under Otitis Media Purulenta Chronica.

Concussion of the Labyrinth.—L. *concussio*, violent jar or shock; Gr. λαβύρινθος. Concussion of the labyrinth may be caused by an explosion, the report of a gun, a box on the ear, or fracture of the petrous portion of the temporal bone. The membrana tympani is apt to be ruptured (see Injuries of the Membrana Tympani). Sudden unconsciousness and deafness may occur, or the patient may stagger and become dazed for a time, and suffer with more or less tinnitus and deafness (*q.v.*), and possibly nausea or vomiting and nystagmus (*q.v.*).

Treatment.—Absolute rest in bed in a quiet room is important. For the relief of pain, the artificial leech may be applied to the mastoid, and about two to four ounces of blood abstracted. Distressing tinnitus may be relieved by the administration of sodium bromide (see Part 11 for drug formulæ, etc.)

After the acute symptoms have subsided, potassium iodide or pilocarpine may be prescribed for the purpose of hastening the absorption of a possible exudate. In prescribing pilocarpine, Dench administers gr. ⅛–⅙, by mouth, twice or thrice daily,

gradually increases the dose until a light increase of perspiration and saliva occurs, and continues the latter dosage for two months or longer, if necessary.

Congenital Fistulæ—L. *con*, together + *genitus*, born; *fis'ula*, pipe. See Auricle, Congenital Malformations of the.

Malformations of the Auricle.—See Auricle, Congenital Malformations of the.

Congestion, Labyrinthine.—L. *conge'rere*, to heap together. See Hyperæmia of the Labyrinth.

Tubal—L. *tu'ba*, tube. See Otitis Media Catarrhalis.

Tubo-Tympanic.—L. *tym'panum*, drum. See Otitis Media Catarrhalis.

Croupous Otitis Externa.—See Otitis Externa Membranosa.

Deaf-Mutism.—Deaf-mutism is either congenital or acquired. Congenital deaf-mutism may be due to parental deaf-mutism, parental consanguinity, maternal shock during intra-uterine life, or hereditary syphilis. Acquired deaf-mutism is a result of deafness (*q.v.* for causes), before the age of seven years. The deafness need not be complete.

The Prognosis is more favorable in the congenital than in the acquired form.

Treatment.—Endeavor to correct any possible etiological factor (*q.v.* under Deafness).

Turn the child over early to a reputable institution where deaf-mutes are trained. The child should be at least seven years of age before such instruction is begun. Seven or eight years of instruction are required.

Of the two methods of education of deaf-mutes, the pure oral method, of lip reading and articulation (German method), is, of course, better than the sign and gesture, or French method.

Gorham Bacon says: "When a child has suddenly become deaf from some general disease, such as scarlet fever or diphtheria, it is important for the patient himself to read aloud for an hour or two each day in order not to lose the art of speech."

An important preventive measure is the timely incision of a bulging drum-membrane in acute otitis media complicating the acute infectious diseases (see Otitis Media Catarrhalis Acuta).

Deafness.—**Etiology.**—I. External Auditory Canal Affections.—Ceruminous or epithelial plugs; otomycosis; foreign bodies; furunculosis; otitis externa diffusa; atresia; stricture; exostosis or hyperostosis; polypi and granulations; senile collapse of the cartilaginous meatus; seborrhœa auris.

Deafness.—**Etiology.**—I. Extern.—etc.

II. Drum Membrane Affections.—Perforation; inflammation; thickening; adhesions; herpes; fracture of the handle of the malleus; atrophy.

III. Middle Ear Affections.—Otitis media, acute or chronic, catarrhal or suppurative; tubal congestion or catarrh; tubal stricture; adenoids and enlarged tonsils; paralysis of the stapedius and tensor tympani muscles (usually associated with facial paralysis).

IV. Labyrinth, Acoustic Nerve and Brain Affections.—Labyrinthitis; labyrinthine sclerosis following inflammation; anæmia of the labyrinth; concussion of the labyrinth; labyrinthine hemorrhage; Ménière's disease; nephritis; diabetes, tuberculosis; syphilis; rickets; traumatism; fright; lightning stroke; sunstroke; sudden immersion in water; degeneration and atrophy of the organ of Corti due to constant noise, as in coppersmiths and boilermakers (the damage comes through air conduction, not bone conduction, therefore the prophylactic value of an air-free stopper, *e.g.* a moist pledget of cotton in the external meatus); quinine, salicylate, or gas poisoning; infectious diseases; congenital defects (due to parental consanguinity, parental deaf-mutism, maternal shock during intra-uterine life, congenital syphilis); acoustic nerve paralysis; hysteria; neurasthenia; lesions of the superior convolution of the temporal lobe (word-deafness, or loss of memory of the meaning of words heard, results from destruction of the superior temporal gyrus on the left side), internal capsule, corpora quadrigemina and geniculate bodies, and pons, *e.g.*, tabes, multiple sclerosis, hydrocephalus, meningitis, hemorrhage, traumatism, aneurysm, inflammation, and tumors, especially tumors in the cerebello-pontine recess; senility, producing sclerosis of the auditory artery or nerve atrophy. (Consult the various captions for consideration of the individual causes of deafness.)

Diagnosis.—In labyrinthine and nerve deafness, hearing for high-pitched and sharp sounds is impaired, and both air and bone conduction are diminished, the latter being usually lost. In middle ear deafness, air conduction is diminished and bone conduction increased (consult Examination of the Ear, for Hearing Tests, etc.).

Deformed Ears.—See Auricle, Congenital Malformations of the.

Diffuse Otitis Externa.—See Otitis Externa Diffusa.

Diphtheritic Otitis Externa.—See Otitis Externa Membranosa.

Dizziness.—See Vertigo in Part 1.

Drum Membrane.—See Membrana Tympani.

Dry Type of Chronic Aural Catarrh.—See Otitis Media Catarrhalis Chronica.

Earache.—**Causes.**—1. INFLAMMATORY EARACHE—Otitis media acuta; myringitis; otitis externa; otomycosis.

2. NON-INFLAMMATORY EARACHE; OTALGIA.—"Cold; anæmia; hyperæmia; hysteria; neurasthenia; sexual derangements; perineuritis; exostoses in the interior of the cranium; new growths and inflammation of the Gasserian ganglion; trigeminal neuralgia associated with herpes zoster of the face; brain tumor; caries of the cranial bones; caries of the cervical vertebræ; carcinoma in the superior maxilla, the retropharyngeal region (the tonsils, the larynx), or the tongue; carious teeth, and eruption of the molars (common causes in children); ulcers in the larynx, and in the neighborhood of the pharyngeal orifice of the eustachian tube; severe noise; possibly syphilis" (Politzer); quinsy.

Otalgia is distinguished from an inflammatory earache by the absence of inflammatory phenomena.

Treatment.—Consider the cause (*q.v.* in its appropriate alphabetical place and part). Local remedial measures embrace vesicant applications to the mastoid process (see under Cantharides in Part 11); belladonna p aster; inunctions of opium or veratrum ointment; galvanization (the anode to the ear and the cathode to the neck); repeated massage "in those cases in which the pain is increased upon pressure between the ramus of the jaw and the mastoid process," the site of the cartilaginous portion of the eustachian tube; and massage of the tympanic membrane by means of Lucae's probe ("highly praised.") (Politzer.)

Neuralgia of the mastoid may be due to an osteosclerosis following a chronic middle ear suppuration, or a successful radical operation, and is in such cases relieved by chiseling away a wedge-shaped portion of the mastoid bone. (Politzer.)

Politzer mentions as possible internal remedies (see Part 11 for formulæ, etc.), quinine, sodium or potassium iodide, iodoform, salicylates, arsenic, iron, oil of turpentine, atropine, zinc oxide, valerian, asafœtida, hyoscyamus, bromide, antipyrine, phenacetin, galbanum, wines, etc.

Ear Deformity.—See Auricle, Congenital Malformations of the.

Examination of the.—See Examination of the Ear.

Ear, External.—See External Auditory Meatus; and Auricle.

Foreign Bodies in the.—See Foreign Bodies in the Ear.

Internal.—See Labyrinth.

Middle.—See Otitis Media.

Protruding.—See under Auricle, Congenital Malformations of the.

Ringing in the.—See Tinnitus Aurium.

Small.—See Auricle, Congenital Malformations of the.

Syphilis of the External.—See Otitis Externa Syphilitica.

Eczema Auris.—Gr. ἐκζεῖν to boil out; L. *au'ris*, ear. Eczema is an acute, subacute, or chronic, itching, catarrhal inflammation of the skin, of variable character (erythematous papular, vesicular, pustular, squamous), with usually a sticky oozing or weeping, or a history of such, and with more or less epidermic thickening and a tendency to crust or scale formation.

Etiology.—(a) Constitutional: Habitual overeating, improper or insufficient food, dyspepsia, constipation, obesity, lithæmia, irregular habits, tuberculosis, rickets, anæmia, general debility, physical or mental overwork, shock, neurasthenia, hysteria, nerve injuries, asthma, reflex irritation (dentition, adherent prepuce, movable kidney, uterine disturbances, etc., no doubt giving rise to nervous irritability and resulting impairment of the general bodily functions), nephritis, diabetes mellitus and insipidus, malaria, intestinal parasites.

(b) Local: Irritating applications, cold, heat, sea air, winds, sunlight, scratching, covering the ears, pediculosis capitis, seborrhœa (*q.v.*), otomycosis (*q.v.*), otorrhœa, chemical irritants, *e.g.*, sulphur, tar, chrysarobin, turpentine, mercurials, iodoform, benzine, mustard, lime, paints, dyes, antiseptics, polishing materials, pastes, sugar flour, tobacco, acids, alkalies, strong soap, the excessive use of water and soap, etc.

Treatment.—Enjoin the observance of correct hygiene, *e.g.*, adequate rest and exercise, regular hours of eating and sleeping, rest before and after meals, a plain but nutritious diet, proper bowel activity, fresh air day and night, avoiding draughts, and adequate, dry clothing. The following articles of food should be avoided, viz., pork in any form, salted meats, cooked-over meats, veal, "gamy" fowl, crabs, lobsters, fried foods, gravies, pastries and cakes, hot breads, hot griddle cakes, sweets and confections, syrups, soups, sauces, cheese, pickles, condiments, spices, sweet potatoes, Irish potatoes, cabbage, fried eggplant, tomatoes, oatmeal,

bananas, apples, tea, coffee, alcohol, and tobacco. The diet should consist chiefly of bread and butter, milk, eggs, fresh, plainly cooked vegetables, fresh fish, chicken occasionally, with other meats no oftener than once or twice a week. A glassful of hot water containing soda bicarbonate, gr. xv, or Vichy should be drunk one hour before meals and between meals. Potassium acetate or citrate, gr. x, t.i.d., may be added.

Soften crusts and scales with a bland oil (olive, cottonseed, or almond) for a day or longer, and remove them gently with the curette or forceps; avoid the use of water. Then apply the following ointment:

℞ Acidi salicyli..... gr. vii–xii
Adipis lanæ hydrosi,
Petrolati mollis, aa..... ℥ss
M. Sig.—Apply as directed.

In chronic, squamous cases, paint the canal or external skin with silver nitrate solution, 10 to 20 per cent. Dench recommends, for chronic, indurated cases, frequent but cautious applications of acetum cantharidis, with a cotton mop, until the induration has disappeared.

Embolism, Labyrinthine.—Gr. ἔμβολος plug. See Labyrinthine Hemorrhage, at the end.

Epidural Abscess.—Gr. ἐπί on; L. *dur'a*, hard. See Abscess, Brain.

Epithelial Plugs.—Gr. ἐπί on + θηλή nipple. See Wax, Inspissated.

Eustachian Catarrh.—B. Eustachi, d. 1574; Gr. καταῤῥεῖν to flow down. See Otitis Media Catarrhalis

Catheterization.—Gr. καθετήρ. See Inflating the Middle Ear.

Congestion.—L. *congérere*, to heap together. See Otitis Media Catarrhalis.

Examination of the Ear.—In making an otoscopic examination, straighten the canal by pulling the auricle outward, backward and upward in adults, downward in infants and children.

Ascertain the mobility of the membrane and ossicles by means of Siegle's pneumatic speculum.

Hearing and Labyrinthine Tests.—I. Voice and Watch Tests.—In performing the voice and watch tests, blindfold the patient, close the ear not being tested, and approach the watch or voice to the ear until it is heard. In the voice test, use whispered numbers of two figures, producing the voice sounds with the "reserve air" remaining in the lungs after a forced inspiration followed immediately by a normal expiration.

Whisper = $\frac{4}{10}$ means whispered voice heard at four feet, normal hearing distance, ten feet.

H. W. = $\frac{12}{40}$ means watch heard at twelve inches; normal distance, forty inches. One may use the Politzer acoumeter instead of the watch.

H. W. = $\frac{\text{contact}}{40}$ means watch heard on contact with the auricle.

H. W. = $\frac{\text{pressure}}{40}$ means watch heard on pressure upon the auricle.

If, in the hearing tests, the same results are obtained when both ears are stopped as when only the sound ear is stopped, then the defective ear is totally deaf.

II. Range of Hearing.—Ascertain the limits between which musical notes are perceived, by means of Dench's low-pitch tuning fork and the Galton whistle. The normal range of hearing is from about 16 to about 48,000 double vibrations per second. After fifty years of age the upper limit is reduced. Impairment of the conducting apparatus results in impairment or loss of hearing for the lower tones of the scale. Impairment of the perception apparatus results in loss of hearing for the high tones.

III. Weber's Test.—A vibrating tuning fork (no higher than C″), placed with its handle upon the teeth, chin, or cranium, midway between the two ears, in a case of unilateral deafness, is heard best in the deaf ear if the deafness is due to disease of the conducting mechanism, *e.g.*, wax, eustachian occlusion, otitis media, etc.; but it is heard best in the sound ear if the deafness is due to labyrinthine or nerve disease.

IV. Rinne's Test.—Normally the duration of air conduction is about double that of bone conduction.

If a vibrating tuning fork (preferably a′), placed over the mastoid process, just behind the external meatus, until it is no longer heard, is then at once placed before and close to the ear, with a reappearance of the sound, any impairment of hearing in the ear tested is located in the internal ear. If the sound is heard best by bone conduction, the impairment of hearing is due to disease of the conducting mechanism.

Rinne + $\frac{25}{50}$ means tuning fork heard for twenty-five seconds upon the mastoid, and fifty seconds close to the meatus.

Rinne — $\frac{30}{10}$ means tuning fork heard for thirty seconds upon the mastoid, and ten seconds close to the meatus.

V. Schwabach's Test.—Use the tuning forks, C₋′ (26 to 64 v.s.), C (128 v.s.), C′ (256 v.s.), C″ (512 v.s.), C‴ (1024 v.s.), C^{IV} (2048 v.s.)

In the normal ear and in nerve deafness, air conduction is louder than bone conduction. In disease of the conducting apparatus, the reverse is true, excepting with the tuning fork C^{IV}, when the two are about equal. The following illustrative tables, taken partly from Alderton, are of value as a diagnostic guide, and show how a record should be made:

	C-′	C	C′	C″	C‴	C^{IV}	
A.C.	22	25	15	33	32	22	seconds
B.C.	12	13	7	13	13	14	seconds

Average normal ear (A.C. = air conduction; B.C. = bone conduction).

	$C\text{-}^{I}$	C	C′	C″	C‴	C^{IV}	
A.C.	0	8	8	13	15	13	seconds
B.C.	14	14	11	17	16	14	seconds

Typical of obstructive trouble in the conducting apparatus.

	$C\text{-}^{I}$	C	C′	C″	C‴	C^{IV}	
A.C.	12	17	18	21	15	10	seconds
B.C.	4	6	7	6	4	2	seconds

Typical of trouble in the perceiving apparatus.

VI. The Turning Test.—The patient, wearing opaque glasses, is seated erect upon a revolving chair, and turned twice toward the ear under examination. If the labyrinth of this ear is affected, a primary nystagmus will occur, during the turning, toward the affected ear. In the normal ear, about ten turnings in about twenty seconds are required to produce this reaction.

The quick component is toward the affected ear as long as the labyrinth is still functioning; but as soon as complete destruction of the labyrinth occurs, the quick component swings to the other side, where it remains for three or four days, after which it gradually disappears, unless some complication such as meningitis occurs, when it will again move toward the affected side. (Ballenger.)

VII. The Caloric Test.—The introduction of cold or hot water in the external auditory canal, with the head upright, causes a nystagmus toward the other ear if cold is used, toward the same ear if hot is used. The nystagmus does not occur if the vestibular apparatus or nerve is destroyed or paralyzed.

VIII. The Galvanic Test.—One electrode should be about two inches square and flat, and the other, a small ball electrode, about a quarter-inch in diameter. Both electrodes should be wrapped snugly in moist cotton or gauze. The patient should first be examined for the presence of a spontaneous nystagmus.

The large flat electrode, moistened with warm salt solution, is held in either hand of the patient, while the ball electrode, also moistened with salt solution, is applied to the tragus, and the latter pushed into the external meatus. The patient is directed to look straight ahead. The current is then slowly applied.

In normal ears, about four milliampères are required to produce nystagmus. The cathode produces nystagmus to the same side, and the anode to the opposite side. (G. W. MacKenzie.)

IX. The Fistula Symptom.—Compression of air in the external auditory canal produces nystagmus and vertigo in the presence of fistula of the labyrinth, and also, at times, in acute middle ear inflammation in the absence of fistula.

(See the Appendix to Part 7 for a Schema for the Aural History and Examination.)

Exostoses and Hyperostoses of the External Auditory Canal.—Gr. ἐξ out; ὑπέρ over; ὀστέον bone. Clinically, a hyperostosis is a diffuse bony growth, whereas an exostosis is a circumscribed, tumor-like growth.

Etiology.—Chronic periostitis secondary to a long-standing otorrhœa; fracture; caries; syphilis; gout; rheumatism; sea-bathing; heredity. The cause, however, is most often not ascertainable.

Treatment.—When the only consequence of the bony stricture is deafness, an attempt should be made to open the canal through pressure by the long-continued wearing of a metal rod between the growth and the wall of the canal.

To remove ceruminous and epidermic accumulations from behind the growth, insert the point of a small tympanic catheter, and inject by means of a Pravaz syringe about ten drops of a warm solution of sodium bicarbonate, gr. xxv, and glycerine, ℥i, in water, ℥i. The next day syringe with warm water through the catheter, and instil a warm alcoholic solution of boric acid, gr. xl to the ounce, unless acute (not chronic) inflammation or bone caries is present, which contraindicates the use of alcohol. For the removal of granulations, see Aural Polypi and Granulations.

When the growth causes serious retention of pus, it should be removed. The auricle is displaced forward, the lining of the posterior wall of the canal dissected away, the growth removed with the mallet and chisel, or gouge, or burr driven by a dental engine, the hemorrhage controlled, the retroauricular wound sutured, and the canal filled with a strip of iodoform or boric acid gauze. A complicat-

ing chronic middle-ear suppuration calls for the radical mastoid operation.

External Auditory Canal, Abscess in the.—L. *exter'nus*, outside; *audir'e*, to hear; *canális*; *adhær'ere*, to stick to. See Otitis Externa Circumscripta Acuta.

Adhesions of the.—See Stricture of the External Auditory Canal.

Atresia of the.—See Atresia of the External Auditory Canal.

Cerumen in the.—L. *ceru'men*, earwax. See Wax, Inspissated.

Eczema of the.—See Eczema Auris.

Epidermal Plugs in the.—Gr. ἐπί upon + δέρμα skin. See Wax, Inspissated.

Exostoses of the.—See Exostoses and Hyperostoses.

Foreign Bodies in the.—See Foreign Bodies in the Ear.

Fungus Invasion of the.—L. *fung'us* See Otomycosis.

Furunculosis of the.—L. *furuńculus*, a boil. See Otitis Externa Circumscripta Acuta.

Granulations in the.—See Aural Polypi and Granulations.

Hyperostoses of the.—Gr. ὑπέρ over + ὀστέον bone. See Exostoses and Hyperostoses.

Inflammation of the.—L. *inflamma're*, to set on fire. See Otitis Externa.

Mycosis of the.—See Otomycosis.

Occlusion of the.—L. *occlu'sio*, closure. See Atresia of the External Auditory Canal.

Polypi in the.—See Aural Polypi and Granulations.

Seborrhœa of the.—See Seborrhœa Auris.

Stricture of the.—See Stricture of the External Auditory Canal.

Syphilis of the.—See Otitis Externa Syphilitica.

Wax in the.—See Wax, Inspissated.

External Mastoiditis.—See Mastoiditis Externa.

Meatus.—L. *meátus*, passage. See External Auditory Canal.

Otitis.—See Otitis Externa.

Extra-Dural Abscess.—L. *ex'tra*, outside; *dur'a*, hard. See Abscess, Brain

Facial Paralysis.—L. *fácies*, face; Gr. παρά beside + λύειν to loosen. See under Otitis Media Purulenta Acuta; and Chronica; and Mastoiditis Interna.

Fistula, Congenital.—L. *fist'ula*, pipe. See Auricle, Congenital Malformations of the.

Fistula Symptom.—See Examination of the Ear.

Foreign Bodies in the Ear.—If much inflammation and swelling are present, first reduce it by irrigations with warm boric acid solution, etc., as directed under Otitis Externa Diffusa, before attempting to remove the foreign body. If the latter is likely to swell (pea, bean, etc.), pour warm oil, or glycerine, or alcohol into the canal before syringing. Insects should first be killed by drowning in oil; maggots by a 50 per cent. solution of chloroform.

Place the patient in the recumbent position, with the head hanging somewhat over the edge of the table, draw the auricle backward and upward, and direct a stream of warm water between the foreign body and the wall of the canal.

If syringing fails, a fine camel's-hair brush dipped in glue may be brought in contact with the foreign body, which has first been dried, the brush left in place until the glue has hardened, and then withdrawn.

If instrumentation is necessary, try first the traction hook (it can be made from a steel hairpin), before resorting to forceps. Employ instruments with great care, under good illumination. An anæsthetic may be required.

The galvano-cautery has sometimes been employed to divide the foreign body before extracting it.

In very rare instances it may be necessary to detach the auricle and posterior wall of the cartilaginous canal by an incision behind the pinna close to the canal.

Fungus Invasion of the External Auditory Canal.—L. *fun'gus*; *in*, into + *vad'ere*, to go. See Otomycosis.

Furunculosis of the External Auditory Canal.—L. *furuńculus*, boil. See Otitis Externa Circumscripta Acuta.

Galvanic Test.—A. Galvani, 1737–1762. See Examination of the Ear.

Granulations.—See Aural Polypi and Granulations.

Hæmatoma Auris.—Gr. αἷμα blood + -ωμα tumor; L. *aur'is*, ear. A sudden effusion of blood between the auricular cartilage and the overlying perichondrium, due to traumatism, or at times occurring spontaneously (*q*) in the insane. It is opaque by transmitted light.

Treatment.—Apply ice-bags or a Leiter's coil until the pain subsides, then apply liquor plumbi subacetatis or Burow's solution (see Part 11), until healing occurs; or paint with contractile collodion in order to exert compression; or paint with cantharidal collodion to promote absorption (warmly

recommended by Hearder); or employ compression by means of a bandage, together with massage; or, if deemed best, make an incision under local cocaine or novocaine anæsthesia (see Part 11), turn out the clot, irrigate with sterile normal saline solution (℥i ad Oi) or boiled boric acid solution (℥i–iv ad Oi), and suture, leaving a narrow gauze drain in the lower angle of the wound for about twenty-four hours.

Gentle massage may be employed after healing has set in.

Hearing, Artificial Aids to.—See under Otitis Media Catarrhalis Chronica; and Otitis Media Purulenta Chronica.

Defective.—See Deafness.

Tests.—See Examination of the Ear.

Hemorrhage, Labyrinthine.—See Labyrinthine Hemorrhage.

Hemorrhagic Otitis Externa.—See Otitis Externa Hæmorrhagica.

History, Aural.—See Schema for the Aural History and Examination, in the Appendix, following Part 7.

Hyperæmia of the Labyrinth.—Gr. *ὑπέρ* over + *αἷμα* blood; *λαβύρινθος*. Labyrinthine hyperæmia or congestion is diagnosed from the following association of symptoms, viz., "tinnitus, dizziness, a feeling of fullness in the ears and tightness in the head, nausea, unsteady gait, and congestion of the vessels along the handle of the malleus." (Politzer.) It is distinguished from Ménière's disease (*q.v.*,) by the rapid subsidence of the symptoms without any residual disturbances of hearing. Irritation of the acoustic centre in the brain produces the same symptoms as labyrinthine hyperæmia, but the former condition is not necessarily associated with hyperæmia of the drum membrane.

Etiology.—Acute otitis media; the exanthemata and other acute infections, *e.g.*, typhoid fever, pneumonia, meningitis, puerperal infection, mumps, encephalitis; congestion of the head in goitre, heart, lung, and kidney affections; tumors at the base of the brain causing pressure upon the veins coming from the internal meatus; venous thrombosis; arteriosclerosis; angioneurotic congestion of the cranial vessels; rheumatism; gout; severe coughing, sneezing, or blowing of the nose; sudden lowering of the head; mountain climbing; sudden overexertion; exposure to inclement weather; alcoholism; a blow on the ear, or an explosion; prolonged exposure to sharp sounds; certain drugs, *e.g.*, quinine, salicylates, amyl nitrite.

Treatment.—Correct the cause, if possible. Rest in bed with the head raised, purgation, diuresis, cold applications to the head, alcoholic embrocations behind the ear, the extraction of about four ounces of blood from the mastoid by means of the artificial leech, or a wet-cup (*q.v.* in Part 1) to the nape of the neck, and warm foot-baths are beneficial in acute cases. In chronic cases, the mastoid may be painted with tincture of iodine. Pilocarpine, gr. ⅛ to ⅙ by mouth, twice or thrice daily, increased until a slight increase of the cutaneous and salivary secretions occurs, is recommended; as is also potassium iodide, gr. x, well diluted, t.i.d. See Part 11 for all drug formulæ, etc.

Strychnine in full doses, by stimulating the heart and blood vessels, is useful in relieving local venous congestion.

The bromides in large doses are useful for the relief of a distressing tinnitus.

In the angioneurotic form of congestion, the application of the galvanic current to the sympathetic nerve of the neck is recommended.

Enjoin, as prophylactic measures, a simple diet, regulation of the bowels, regular hours, daily exercise in the fresh air, frequent bathing, and the avoidance of tea, coffee, alcohol, and tobacco.

Hyperostosis of the External Auditory Canal.—See Exostoses and Hyperostoses.

Hyperplastic Aural Catarrh.—Gr. *ὑπέρ* over + *πλάσις* formation. See Otitis Media Catarrhalis Chronica.

Hypertrophic Aural Catarrh.—Gr. *ὑπέρ* over + *τροφή* nutrition. See Otitis Media Catarrhalis Chronica.

Impacted Cerumen.—L. *impáctus*, wedged; *ceru'men*, ear-wax. See Wax, Inspissated.

Inflammation of the Auricle.—L. *inflammáre*, to set on fire. See Perichondritis Auriculæ.

Eustachian Tube.—See Otitis Media Catarrhalis.

External Auditory Canal.—See Otitis Externa.

Labyrinth.—See Labyrinthitis.

Mastoid.—See Mastoiditis.

Membrana Tympani.—See Myringitis.

Middle Ear.—See Otitis Media.

Inflating the Middle Ear.—**1. Valsalva's Method.**—Close the mouth and nose and then attempt to blow through the closed nose.

2. Politzer's Method.—Have the patient take a small quantity of water in the mouth, and then hold the nozzle of a Politzer bag in one nostril while closing the other with the finger. Then tell the patient to swallow, and as soon as the larynx is seen to rise, quickly compress the bag.

3. Catheterization of the Eustachian Tube.—Pass the catheter along the floor of the nose,

beak downward, until the latter touches the posterior wall of the pharynx; then rotate it inward through an angle of 45 degrees, draw it forward until the beak impinges upon the posterior edge of the septum, then rotate it outward through an angle of a little over 90 degrees, when it should be at the mouth of the Eustachian tube.

Another method is as follows: Introduce the catheter, beak downward, close to the septum and gently hugging the floor of the nose, until the beak is felt to slip down over the soft palate. Then, avoiding forward traction, rotate the catheter until the ring points toward the outer canthus or pupil of the eye, when it should be at the mouth of the Eustachian tube.

It may be best to precede the catheterization by a spray of cocaine, 4 per cent. The catheter should be warmed and lubricated with sterile vaseline before insertion.

By means of the auscultation tube, one end of which is placed in the physician's ear and the other end in the ear under examination, there is heard, during inflation of the normal ear, a soft, dry, blowing sound with a metallic click or snap. If fluid is present, crackling râles are heard. If the drum membrane is perforated, a whistling sound is heard.

Injuries of the Labyrinth.—See Concussion of the Labyrinth.

Injuries of the Membrana Tympani.—**Etiology.**—Fracture of its supporting bone; foreign bodies, such as pins, wood, ear-spoons, instruments, etc.; caustics; hot fluids; violent coughing, vomiting, or sneezing; violent inflation of the tympanum by Politzer's method; Siegle's otoscope; box on the ear; explosion; diving; sea bathing.

The prognosis is good if the labyrinth is not involved (see Concussion of the Labyrinth), and if infection does not supervene.

Treatment.—Some advise that a sterile cotton or gauze tampon be placed in the meatus, and the patient kept absolutely quiet on a low diet for a few days, no drops or syringing being employed. Dench, however, advises syringing with warm bichloride solution, 1 : 6000, at first every two hours, and later less often as the sero-sanguinolent discharge diminishes. See Concussion of the Labyrinth, for the symptoms and treatment of this complication.

Inspissated Wax.—See Wax, Inspissated.

Internal Ear.—L. *inter'nus.* See Labyrinth.

Mastoiditis.—See Mastoiditis Interna.

Ionic Medication.—See Part 1, General Medicine and Surgery.

Ischæmia, Labyrinthine.—Gr. ἴσχειν to hold back + αἷμα blood. See Anæmia of the Labyrinth.

Keratosis Obturans.—Gr. κέρας horn; L. *ob'turans,* obstructing. See Wax, Inspissated.

Labyrinthine Anæmia.—Gr. λαβύρινθος. See Anæmia of the Labyrinth.

Apoplexy.—Gr. ἀποπληξία. See Labyrinthine Hemorrhage.

Concussion.—See Concussion of the Labyrinth.

Congestion.—L. *congeśtio,* from *conger'ere,* to heap together. See Hyperæmia of the Labyrinth.

Embolism and Thrombosis.—Gr. ἔμβολος plug; θρόμβος clot. See Labyrinthine Hemorrhage.

Labyrinthine Hemorrhage or Apoplexy.—Gr. αἷμα blood + ῥηγνύναι to burst forth; ἀποπληξία stroke. Labyrinthine hemorrhage may occur in any condition which produces labyrinthine hyperæmia (*q.v.*), in infectious diseases, pachymeningitis hæmorrhagica, anæmia, leukæmia, nephritis, diabetes, gout, rheumatism, arteriosclerosis, cranial fracture or concussion, a sudden loud sound or explosion, embolism of the internal auditory artery, sudden exertion, forcible inflation of the middle ear, severe coughing or sneezing, holding the breath overlong, lowering the head too long, mobilization or removal of the stapes.

It is manifested by the sudden occurrence of marked giddiness, nausea, tinnitus, and labyrinthine deafness (see Deafness), sometimes unconsciousness.

More or less restoration of function may be looked for, but also recurrences of the hemorrhage, which should be guarded against.

Treatment.—Absolute rest in bed in a quiet room, with the head raised, and an ice-cap applied, is imperative. Open the bowels freely by means of calomel followed by a saline (see Part 11), and extract at least four ounces of blood from the mastoid by means of the artificial leech or wet-cup (*q.v.* in Part 1), unless the patient is anæmic.

After the acute symptoms have subsided, aim to promote absorption by the administration of pilocarpine by mouth, gr. ⅛ to ⅙ twice or thrice daily, increased rapidly until slight sweating and salivation are produced, and then continued for two or more months, if necessary. Potassium iodide, gr. x, well diluted, t.i.d. may be given subsequently. Tincture of iodine or vesicants may be applied to the mastoid. (See Drugs, Part 11).

Enjoin, prophylactically, a simple diet, regulation of the bowels, regular hours, daily exercise in the fresh air, frequent bath-

ing, and the avoidance of tea, coffee, alcohol, and tobacco.

(Embolism or thrombosis of the labyrinthine vessels occurring in septicæmia is treated the same as hemorrhage.)

Labyrinthine Hyperæmia.—See Hyperæmia of the Labyrinth.

Inflammation.—L. *inflamma're*, to set on fire. See Labyrinthitis.

Injuries.—See Concussion of the Labyrinth.

Ischæmia.—Gr. *ἴσχειν* to hold back + *αἷμα* blood. See Anæmia of the Labyrinth.

Thrombosis.—Gr. *θρόμβος* clot. See Labyrinthine Hemorrhage.

Traumatism.—Gr. *τραῦμα* wound. See Concussion of the Labyrinth.

Labyrinthitis.—Gr. *λαβύρινθος* + *-ιτις* inflammation. Acute, primary labyrinthitis occurs in children in scarlet fever, measles, diphtheria, mumps, typhoid fever, typhus fever, variola, vaccinia, chicken-pox, influenza, erysipelas, dysentery, whooping-cough, pneumonia, cerebrospinal meningitis, malaria, rheumatic fever, etc.

It "arises suddenly with fever, marked redness of the face, and vomiting, which are soon followed by unconsciousness, delirium, and convulsions." "These symptoms disappear completely within a few days (as distinguished from meningitis), but total deafness, tinnitus, and a staggering gait remain for some time" (Politzer). Syphilis is also a cause of primary labyrinthitis, which may appear suddenly with tinnitus, dizziness, and marked deafness, but no vomiting or severe vertigo, and slight or absent disturbance of equilibrium.

Secondary labyrinthitis, suppurative or non-suppurative, occurs in acute and chronic suppurative and non-suppurative otitis media. It is commonest in children. The symptoms are sudden giddiness, tinnitus, nystagmus (*q.v.*), and deafness (upper tone limit lowered; bone conduction diminished or absent, see Hearing and Labyrinthine Tests, under Examination of the Ear).

Suppurative labyrinthitis may be distinguished from cerebellar abscess as follows: In suppurative labyrinthitis, "the nystagmus becomes less and less marked, and finally disappears as the suppuration extends; while in cerebellar abscess it increases as the disease progresses." "In suppuration of the labyrinth, nystagmus occurs in the beginning, when the eye is turned toward the diseased side; whereas the strabismus may disappear and the nystagmus still be present when the eye is turned to the unaffected side." "In cerebellar abscess the conditions are reversed, and the nystagmus is first observed when the quick component is to the normal side, and is later to the diseased side." "When this form of nystagmus is observed a positive diagnosis of cerebellar abscess may be made." "The diagnosis may be made in many cases without the foregoing objective signs by the presence of pronounced deafness, tinnitus, vertigo, and headache." (Ballenger.)

See also Hearing and Labyrinthine Tests.

Treatment.—In the early stage of acute, non-suppurative labyrinthitis, enjoin absolute rest in bed in a quiet room, with the head raised, and an ice-cap or Leiter's coil applied; extract about two to four ounces of blood from the mastoid region by means of the artificial leech or wet-cup (*q.v.* in Part 1), and administer divided doses of calomel followed by a saline (see Part 11). Syphilis, of course, calls for specific treatment (see Syphilis, in Part 1, on General Medicine and Surgery).

After the acute symptoms have subsided, administer pilocarpine by mouth, gr. $\frac{1}{6}$ to $\frac{1}{8}$, twice or thrice daily, and increase the dose until a slight increase of perspiration and saliva occurs; then continue the physiological dose for two months or longer, with the object of promoting absorption of the inflammatory exudate. Potassium iodide, gr. x, well diluted, t.i.d, may be given subsequently. Strychnine should be given in full doses, gr. $\frac{1}{40}$ t.i.d., increased to gr. $\frac{1}{20}$ to $\frac{1}{15}$, t.i.d. (see Drugs, Part 11), when the acute symptoms have disappeared. Apply also, by inunction, unguentum iodi (*q.v.*) to the mastoid region. Forbid the excessive use of alcohol and tobacco, quinine, salicylates, overeating, and fatigue. As a form of massage, Dench recommends reading distinctly to the patient for ten to fifteen minutes twice daily, or the use of the phonograph, vibrophone, or vibrometer. For distressing tinnitus, prescribe bromides.

Suppurative labyrinthitis demands the radical meato-mastoid operation.

Prognosis.—The prognosis in regard to hearing is not very favorable in meningitic cases; it is more favorable in other cases; it is bad in suppurative cases. In children, proper measures should be taken against deaf-mutism (*q.v.*).

Malformations, Congenital, of the Auricle.—See Auricle, Congenital Malformations of the.

Mastoiditis Externa.—Gr. *μαστός* breast + *εἶδος* form + *-ιτις* inflammation; L. *exter'nus*, outside. Primary acute inflamma-

tion of the mastoid periosteum is very rare. The hearing is usually normal, which distinguishes the affection from mastoiditis externa due to otitis media.

Etiology.—" Cold "; furunculosis of the external meatus; etc.

Treatment.—Apply the artificial leech in the early stage of the inflammation, followed by the ice-bag or Leiter cold coil. If no relief ensues, make a free incision down to the bone. If the latter is carious, remove the dead bone with chisels and gouges.

Mastoiditis Interna.—Gr. *μαστός* breast + *εἶδος* form + *-ιτις* inflammation; L. *inter'nus* inside. The occurrence of internal mastoiditis as a primary affection, due to " cold," influenza, pneumococcus infection, tuberculosis, syphilis, traumatism, otitis externa, etc., is very rare; it is nearly always secondary to acute or chronic suppurative otitis media. Normal hearing would point to primary mastoid disease.

Symptomatology.—Pain, persistent or remittent, sometimes not a prominent symptom; tenderness (in pressing upon the mastoid to elicit tenderness, do not touch the auricle, for in otitis externa the auricle is very sensitive; remember also that pressure just beneath the mastoid tip produces pain in normal individuals); distinct periosteal thickening (osteitis), revealed by touch; local elevation of temperature; general elevation of temperature, often low; local swelling sometimes; marked bulging of the drum membrane, or if the latter is perforated, often a nipple-like projection in the posterior superior quadrant; bulging perhaps of the posterior superior wall of the bony meatus (an absolute indication for opening the mastoid cells); profuse mucopurulent aural discharge; sudden cessation or diminution of the aural discharge; facial paralysis sometimes.

Possible Consequences.—Spontaneous recovery; abscess formation; carionecrosis of bone; spontaneous perforation through the external cortex; extradural abscess, manifested by localized headache, moderate elevation of temperature, perhaps choked disc, no cephalic rigidity, vomiting, or photophobia; brain abscess, manifested by headache, mental torpidity, asthenia, constant low temperature, perhaps motor or other focal symptoms of irritation or destruction, perhaps vomiting and choked disc; meningitis, manifested by intense headache, photophobia, constant high temperature, rapid pulse, rigidity of the neck, nausea and vomiting, choked disc, and local paralyses, particularly strabismus; sigmoid sinus phlebitis, manifested by a septic temperature, with wide fluctuations, sweats, prostration, perhaps choked disc, tenderness and swelling along the internal jugular vein if the latter becomes involved; burrowing of pus beneath the deep fascia of the neck, giving rise to septico-pyæmia or a post-pharyngeal abscess; septico-pyæmia.

Several of the above complications may occur together; they demand immediate operation.

Prognosis.—This is usually favorable in simple, uncomplicated cases; less favorable in those cases associated with influenza, measles, scarlet fever, diphtheria, typhus fever, streptococcus infection, tuberculosis, syphilis, and diabetes.

Treatment.—A. When, in the course of an acute otitis media, the drum membrane appears greatly congested, swollen, and bulging, and there is pain and tenderness in the mastoid region, the membrane should be freely incised, as directed under Otitis Media Purulenta Acuta, and the ear should be frequently irrigated with warm bichloride solution, 1 : 8000 to 4000, or saturated boric acid solution (4 per cent.). It is customary, in the first or hyperæmic stage only, to apply cold to the mastoid continuously, preferably by means of siphonage through a Leiter's coil. The coil should be kept on no longer than from thirty-six to forty-eight hours, since it may mask important symptoms; and it should never be reapplied after having been removed. Gleason advocates the application of heat instead of cold. It is also commonly advised that not less than four ounces of blood be extracted by means of the artificial leech applied over the antrum and tip of the mastoid (the antrum is just above and behind the external meatus). Theobald and Dench, among others, think little, however, of blood-letting and cold applications.

The patient should be kept in bed, on liquid diet, and calomel should be administered in small, frequently repeated doses followed by a saline (see Part 11 for all drugs). Theobald has great faith in sodium pyrophosphate (*q.v.*) as an anti-suppurant, and also recommends mercury for its constitutional effects, viz., calomel, gr. ¼ to ½ every hour or two, and inunctions of unguentum hydrargyri (*q.v.*). Mercury should not be given, however, to cachectic or strumous patients. Tincture of aconite, in one-drop doses (see Part 11), is also advocated for the early stage, when the pulse is hard and full. Bier's hyperæmic treatment is still *sub judice*.

By these measures the mastoid inflamma-

tion may possibly be checked in from three to eight days. In cases of influenza, diphtheria, scarlet fever, tuberculosis, and syphilis, however, abscess formation, it is said, can seldom be checked, and the mastoid cells should be opened early, before extensive destruction of bone occurs.

If, after several days' trial (about eight days—Politzer), the antiphlogistic treatment proves of no avail, "if the profuse otorrhœa, pain in the mastoid, and fever continue, and especially if the evening exacerbations of fever do not cease, or symptoms of a labyrinthine (nausea, vomiting, dizziness, disturbance of equilibrium, nystagmus) or meningeal irritation (nausea, vomiting, severe headache), or chills occur" (Politzer), the mastoid process must immediately be opened. A complete operation with obliteration of *all* of the mastoid cells should be done in every case.

"When the temperature remains elevated after the mastoid cells have been opened, one can be fairly confident that some complication exists, possibly a pneumonia, or thrombosis of the sigmoid sinus, or other intracranial disease, or erysipelas." (Gorham Bacon.)

It should be borne in mind that the diagnosis of mastoiditis does not necessarily call for a mastoidectomy. The latter operation is indicated only when it is quite clear that the mastoid inflammation has gone on into abscess formation.

B. In chronic, persistent middle ear suppuration, the indications for the radical meato-mastoid or Stacke-Schwartze operation are, according to Politzer, the following:

Caries of the temporal bone; fistulæ on the mastoid process, in the osseus meatus, or at the posterior-superior margin of the membrana tympani associated with persistent antral suppuration; persistent fetid middle ear suppuration; recurrent polyposis arising from the attic and antrum; persistent cholesteatoma in the middle ear; intractable stricture of the external meatus; facial nerve paresis; persistent pyrexia or a septic fever; inter-current acute abscess formation in the mastoid; the occurrence of severe headache, nausea and vomiting, pointing to cerebral involvement; choked optic disc; the occurrence of dizziness, nystagmus, nausea, staggering gait, profound deafness (see Hearing and Labyrinthine Tests), indicative of labyrinthine suppuration; persistent or oft-recurring pains and localized headaches. (Mastoid neuralgia may be caused by osteosclerosis, following chronic mastoiditis, and is relieved by the removal of a wedge of bone from the mastoid process.—Schwartze).

The radical meato-mastoid or Schwartze-Stacke operation aims to convert the "cavum tympani, the attic, and the antrum into one common, smooth-edged, open cavity by the removal of the posterior superior wall of the osseous meatus and the external attic wall, and furthermore to induce the surface of the wound to become covered with epidermis and to cicatrize by proper after-treatment." (Politzer.)

The hearing frequently gets worse after the operation.

Meatus.—L. for passage. See External Auditory Canal.

Mechanical Aids to Hearing.—See under Otitis Media Chronica, Catarrhalis, et Purulenta.

Membrana Tympani, Inflammation of the.—L., membrane of the drum. See Myringitis.

Injuries of the.—See Injuries of the Membrana Tympani.

Perforations, Closure of.—See under Otitis Media Purulenta Chronica.

Membranous Otitis Externa.—See Otitis Externa Membranosa.

Ménière's Disease.—Ménière's disease is due to an exudation into the semicircular canals, and is characterized by sudden momentary loss or impairment of consciousness, labyrinthine deafness (*q.v.*), usually bilateral, severe tinnitus, nausea, vomiting, vertigo, and a staggering gait. No other paralyses than that of the auditory nerve terminals are observed, which eliminates apoplexy.

An increase of pressure in the labyrinthine fluid, resulting from the forcing inward of the stapes due to intermittent closure of the Eustachian tube in middle ear disease, or resulting from the pressure of cerumen against the drumhead, is manifested by vertigo, disturbance of equilibrium, nausea, tinnitus, and some deafness, but such cases are perhaps not properly classified under Ménière's disease (see also Vertigo.)

Assigned Causes.—Intense heat; nephritis; gout; diabetes; pernicious anæmia; leukæmia; purpura; chlorosis; arteriosclerosis; thyroid intoxication; intestinal intoxication; syphilis; chemical poisons: alcohol, tobacco, arsenic, quinine, salicylates; acute infectious diseases: influenza, mumps, meningitis, etc.; labyrinthitis; cranial traumatism; hereditary malformation of the internal ear; tabes dorsalis, multiple sclerosis, tumors, abscess, and other diseases of the central nervous system; angioneurotic œdema (?).

Prognosis.—This is unfavorable in regard to the deafness. The dizziness gradually dis-

appears within a few weeks or months. The tinnitus and staggering gait may or may not persist for years. Relapses may occur.

Treatment.—Put the patient to bed in a quiet room with the head moderately raised, and an ice-cap or Leiter's coil applied. Paint tincture of iodine behind the ears, or apply blisters (see Part 11). Open the bowels with calomel, in small, frequently repeated doses followed by a saline. Prescribe a restricted, liquid diet, and forbid tea, coffee, and alcohol. For the relief of the head symptoms, prescribe bromides, gr. xx, well diluted, t.i.d. (see Drugs, Part 11). Babinski recommends lumbar puncture (*q.v.* in Part 1, on General Medicine and Surgery).

After the acute symptoms have subsided (in the second or third week of the attack, says Politzer) give pilocarpine, gr. $\frac{1}{8}$ to $\frac{1}{6}$ by mouth, twice or thrice daily, and increase the dose rapidly until a slight increase of perspiration and saliva is produced, then continue the physiological dose for two months or longer, for the purpose of promoting absorption of the exudate (Dench). Potassium iodide, gr. x, well diluted, t.i.d. may be subsequently prescribed. Strychnine should be given in full doses, gr. $\frac{1}{40}$, t.i.d., increased to gr. $\frac{1}{20}$ to $\frac{1}{15}$, t.i.d., after the acute symptoms have subsided.

Four to ten drops of a warm sterile 2 per cent. solution of pilocarpine, or eight to ten drops of a warm solution of potassium iodide, 0.3 : 20.0, may be injected into the tympanic cavity through the Eustachian catheter (*q.v.*) every second day for three or four weeks; and unguentum iodi applied by inunction to the mastoid process. (Politzer.)

"Rarefaction of the air in the external meatus is an important therapeutic measure." (Politzer.)

Politzer recommends, in those cases in which Ménière's symptoms appear in paroxysms with warning signs, that the patient carry about with him a "rubber tube one-third metre long, the one end of which can be hermetically introduced into the external meatus; when the patient has the sensation of an approaching attack, he can take the other end of the tube in his mouth, and by repeatedly aspirating he can rarify the air in the external meatus."

Any possible etiological influence should be combated; nasal and ocular defects should be treated (consult the appropriate part and caption).

Meningitis.—Gr. *μῆνιγξ* membrane + *-ιτις* inflammation. See under Mastoiditis Interna.

Microtia.—Gr. *μικρός* small + *οὖς* ear. See Auricle, Congenital Malformations of the.

Middle Ear Diseases.—See Otitis Media.

Middle Ear, Inflating the.—See Inflating the Middle Ear.

Moist Type of Chronic Aural Catarrh.—See Otitis Media Catarrhalis Chronica.

Mycosis of the External Auditory Canal.—See Otomycosis.

Myringitis.—L. *miriŋga*, drum-membrane + Gr. *-ιτις* inflammation. Myringitis is manifested by pain and the objective signs of tympanic inflammation, but the presence of only slight deafness (*q.v.*) distinguishes it from otitis media. Acute myringitis lasts usually about three or four days.

Etiology.—Traumatism; exposure to cold air or cold water; extension of inflammation from the external meatus or from the tympanum.

Treatment.—Open the bowels by means of castor-oil or calomel followed by a saline (see Drugs, Part 11); insufflate a minute quantity of finely powdered boric acid, or boric acid and zinc oxide, equal parts; and apply heat, and perhaps the artificial leech to the mastoid process, or in front of and close to the tragus. Open painful abscesses with the paracentesis needle, taking care that not more than one-half of the point is inserted into the membrane.

Should the disease become chronic, which very rarely happens (one should take care to exclude otitis media by testing for perforation of the drum membrane by means of inspection and inflation, *q.v.*), syringe away the secretion gently with warm boiled boric acid solution (℥i–iv ad Oi) or normal saline solution (℥i ad Oi); then dry the parts with sterile cotton on the end of a probe, and insufflate a minute quantity of equal parts of boric acid and zinc oxide powders. If, after several days of such treatment, the secretion does not diminish, instil 15 to 20 drops, two or three drops at a time, of a warm solution of boracic alcohol, 1 : 20, or carbolic alcohol, 1 : 30, and allow the solution to remain in the ear for half an hour (Politzer); or instil a warm solution of zinc sulphate, copper sulphate, or lead acetate, gr. iv to the ounce of water. (Bacon.)

In particularly obstinate cases, apply a warm concentrated solution of silver nitrate (gr. xxxviii ad ℥i), and then neutralize the latter by syringing the meatus with warm salt solution. Repeat the silver applications only after the crust previously formed has been thrown off; three applications a week for three or four weeks usually suffice. (Politzer.)

Treat the desquamative forms of myringitis with continued instillations of alcohol; ulcers with iodoform insufflations.

For the removal of granulations and polypi, consult Aural Polypi and Granulations.

Nerve, Acoustic, Neuritis of the.—Gr. *νεῦρον* nerve + *-ιτις* inflammation. See Acoustic Nerve, Paralysis of the.

Paralysis of the.—See Acoustic Nerve, Paralysis of the.

Noises, Subjective.—See Tinnitus Aurium.

Nystagmus.—See Part 6, Eye Diseases.

Otalgia.—Gr. *οὖς* ear + *ἄλγος* pain. See Earache.

Othæmatoma.—Gr. *οὖς* ear + *αἷμα* blood + *-ωμα* tumor. See Hæmatoma Auris.

Otitis Externa Circumscripta Acuta.—Gr. *οὖς* ear + *ιτις* inflammation; L. *exter'nus*, external; *cir'cum*, around + *scríbere*, to write; *acu'tus* sharp. Furunculosis affects, as a rule, only the cartilaginous portion of the external auditory canal, very exceptionally the osseous portion. The symptoms are pain, swelling, and tenderness on pressure (using a cotton-wound probe), followed later by deafness should the canal become occluded. The auricle is extremely sensitive to manipulation. The disease is subject to recurrences.

Etiology.—Boils are caused by pus organisms, almost always the staphylococci aureus, albus, and citreous. Contributory causes are a chronic otorrhœa, chronic eczema, frequent syringing, irritating applications, such as the prolonged use of alum etc., scratching, foreign bodies, dust, uncleanliness, sewer-gas, dampness, anæmia, chronic alcoholism, nephritis, diabetes mellitus, dyspepsia, gouty or rheumatic diathesis, menstrual disorders, poor health.

Treatment.—Attend to any possible etiological influence, and enjoin the observance of correct hygiene, *e.g.*, adequate rest and exercise, fresh air day and night, cleanliness (cotton in the ears for those who work in a dusty atmosphere), frequent bathing, regular hours of eating and sleeping, rest before and after meals, a generous dietary, regulation of the bowels, and tonics, if indicated, viz., Blaud's pills, elixir ferri, quininæ, et strychninæ phosphati, syrup of hypophosphites, Fowler's solution of arsenic. Fresh brewer's yeast, or the ordinary compressed yeast cake, or furunculin, or ceridin is well recommended, (see Drugs, Part 11). "The use of vaccines is altogether the most effective treatment," says Holt. "Injections should be repeated every three or four days: beginning with fifty millions, the dose may be increased to one hundred millions."

The local treatment is as follows: To abort the inflammation in the early stage, that is, in the first thirty hours, apply the artificial or natural leech or wet cup (*q.v.* in Part 1) in front of the tragus, or to the mastoid region, according to the site of the furuncle (place cotton in the ear if using the natural leech), and insert into the meatus a tampon of cotton soaked in warm carbolized glycerine, 2½ to 5 to 10 per cent., or menthol solution, 10 to 20 per cent., in albolene or olive oil or alcohol. Keep the tampon in place for twenty-four hours, if possible. Warm instillations of Burow's solution (see Part 1) are also said to be often abortal.

If the inflammation can not be aborted, apply dry heat, and as soon as deemed advisable, make a free incision at the most tender place, down through the perichondrium, scrape out the contents of the abscess cavity, and syringe the canal with a warm, boiled solution of boric acid, ʒiv ad Oi. Frequent syringing should be employed by the patient until healing occurs.

For the relief of itching which is apt to follow the subsidence of acute symptoms, instruct the patient to paint the canal with a warm solution of carbolic acid in glycerine, 2½ per cent.

Otitis Externa Crouposa.—See Otitis Externa Membranosa.

Otitis Externa Diffusa.—L. *dis*, apart + *fun'dere*, to pour. Diffuse inflammation of the external auditory canal, of favorable prognosis.

Etiology.—Irritating applications—oils, caustics, etc.; scratching with pins, ear-spoons, etc.; furunculosis; foreign bodies; otomycosis; middle ear suppuration; exposure to cold; sea-bathing; infectious diseases; dental caries; poor health.

Treatment.—Open the bowels by means of calomel, followed by salines (see Part 11). If seen early, at least two ounces of blood may be extracted by the application of the artificial leech close to the tragus. A hot- or cold-water bag or Leiter's coil may then be applied. The canal should be irrigated frequently, by means of a fountain syringe, with warm, boiled, saturated boric acid solution (4 per cent.), or bichloride, 1 : 8000. If the pain is severe, one may instil four or five drops of warm cocaine solution, 4 per cent., and, if necessary, administer a hypodermic of morphine, gr. ⅛ to ¼.

If the canal becomes very narrow, or if the acute symptoms do not abate after the lapse of twenty-four hours, it is recommended that long, free incisions be made through the skin and periosteum, followed

by syringing with warm boric acid solution every two to four hours. Ballenger removes the secretions with a cotton-wound applicator soaked in hydrogen peroxide, followed by the instillation, two or three times daily, of a 12 per cent. carbol-glycerine mixture, cotton-wool being kept in the cartilaginous canal.

After the acute symptoms have subsided, remove all pus and scales by means of the syringe and curette, and insufflate a minute quantity of finely powdered boric acid, or zinc oxide, or equal parts of each, or bismuth subnitrate or subgallate. Cauterize persistent ulcers with a strong solution of silver nitrate, 90 per cent.

In chronic cases, especially with granulations, instil a warm alcoholic solution of boric acid, gr. xx to the ounce. The granulations may be cauterized with silver nitrate or with chromic acid fused on the end of a probe (see also Aural Polypi and Granulations). Where bone is bared it should be scraped.

Otitis Externa Diphtheritica.—Gr. *διφθερα* membrane. See Otitis Externa Membranosa.

Otitis Externa Hæmorrhagica.—Gr. *αἷμα* blood + *ῥηγνίναι* to burst forth. A rare, acute inflammatory affection of the external auditory canal, usually, but not always, secondary to influenzal otitis media, characterized by the appearance of hemorrhagic vesicles, usually in the osseous canal, associated with intense local pain, fever, and prostration.

The Prognosis is favorable, recovery occurring in one or two weeks.

Treatment.—Keep the patient in bed on liquid diet for several days, and open the bowels with castor-oil or calomel followed by salines. Morphine may be demanded for the pain.

After anæsthetizing the parts, if necessary, by the instillation of a 10 per cent. sterile, aqueous solution of cocaine, and waiting twenty minutes, puncture and evacuate the vesicles, dry the canal with sterile absorbent cotton on a probe, and insufflate a minute amount of finely powdered boric acid, the latter to be repeated until the canal remains perfectly dry for twenty-four hours.

Otitis Externa Membranosa.—L. *membrána*, membrane. Membranous inflammation of the external auditory canal occurs in furunculosis of the meatus and in influenzal, scarlatinal, and diphtheritic otitis media.

The Prognosis in furuncular and influenzal cases, in which the white, fibrinous membrane is detachable without bleeding (croupous inflammation) is good; but in scarlatina and diphtheritic cases, in which the membrane is firmly attached and leaves an excoriated, bleeding surface when removed (diphtheritic inflammation) serious necrosis may result, and the labyrinth may become involved, with resulting deafness.

Treatment.—In the croupous type of inflammation, remove the false membrane by syringing with warm hydrogen peroxide or lime water, or by the application of a full strength solution of ferric sulphate, together with the use of forceps. Then dry the canal, paint it with a warm solution of silver nitrate, ʒi ad ʒi, and insufflate a minute amount of finely powdered boric acid, or equal parts of boric acid and iodoform, by means of a powder blower. Repeat the insufflations once or twice daily.

This method of treatment is also advocated for the diphtheritic type of inflammation, but Politzer says, Dench concurring, that "mechanical removal of the diphtheritic membrane hastens the process of healing just as little as cauterization with silver nitrate."

In diphtheritic cases, Politzer recommends that the affected parts be occasionally touched with warm carbolic-glycerine, 1 : 15, or carbolic-alcohol, 1 : 20, and, in addition, the meatus filled several times a day with a warm alcoholic solution of boric acid, 1: 10, or salicylic acid, 1: 100, or corrosive sublimate, 0.05 : 50.0. The occasional application of ferric sulphate in full strength solution, and syringing with warm-lime water, are also recommended. Antitoxine should, of course, be administered (see Diphtheria, in Part 1, on General Medicine and Surgery).

Otitis Externa Syphilitica.—Besides constitutional treatment (see Syphilis, in Part 1, on General Medicine and Surgery), the ear should be syringed with warm bichloride solution, 1: 3000, and all scales, etc., removed with forceps and a cotton wound probe. Then warm lotio nigra (see Part 11) may be instilled, or a minute quantity of iodoform powder insufflated. Ulcers may be painted with tincture of iodine, or treated with calomel powder or yellow oxide of mercury ointment (*q.v.* in Part 11). Gummata, if very large, and condylomata should be cauterized with a concentrated solution of chromic acid.

Otitis Interna.—See Labyrinthitis.

Otitis Media Catarrhalis Acuta.—Gr. *οὖς* ear + *-ιτις* inflammation; *καταῤῥεῖν* to flow down; L. *me'dius*, middle; *acu'tus*, sharp. Acute, catarrhal inflammation of the middle ear is manifested by pain, deafness (*q.v.*), and reddening of the drum-membrane,

especially along the handle of the malleus. Fluid may sometimes be seen behind the membrane. Tinnitus and vertigo, due to increased intra-tympanic pressure, are sometimes present. Bubbling and snapping sounds may be evident to the patient when he blows his nose. There may be some retraction of the drum-membrane and consequent foreshortening of the malleus handle, due to congestion and closure of the eustachian tube and resulting rarefaction of air in the tympanum.

The duration of the disease is from one or two days to one to six weeks. Relapses may occur, and the condition may become chronic (*q.v.*) or purulent (*q.v.*). Streptococcic and pneumococcic cases are severe and tend to become purulent and to involve the mastoid cells; staphylococcic and other infections are usually mild.

Etiology.—Naso-pharyngitis; tonsillitis; the exanthemata and other acute infectious diseases; erysipelas; nasal and epipharyngeal obstruction, due to hypertrophic rhinitis, deflected septum, adenoids, enlarged tonsils, adhesive bands in Rosenmüller's fossa, ethmoiditis and sphenoiditis; dental caries; dentition; exposure to cold and wet; the nasal douche, and sniffing up salt water, also sea-bathing and diving; injury to the drum membrane; heredity; poor health: anæmia, rickets, nephritis, diabetes, tuberculosis, syphilis, gout, and rheumatism.

Politzer says that labyrinthine involvement (see Labyrinthitis) is suggestive of syphilis.

Treatment.—Put the patient to bed on light diet, with plenty of water, say in the form of lemonade, and open the bowels by mean of small, frequently repeated doses of calomel, followed by a saline or castor-oil (see Drugs, Part 11). Prohibit alcohol and tobacco. If the pulse is full and hard, aconite may be prescribed. Aspirin, salol, or sodium salicylate is recommended for the promotion of diaphoresis. The nose and nasopharynx should receive attention (see Part 8, on Nose and Throat Diseases).

For the local pain and congestion, employ one of the following preparations:

℞ Atropinæ ..... gr. i
Cocainæ ..... gr. ii
Olei amygdalæ dulcis ..... ʒii

M. Sig.—Instil six to ten drops, warmed, into the ear, three or four times during the twenty-four hours.—Theobald.

℞ Atropinæ sulphatis ..... gr. i
Morphinæ sulphatis ..... gr. ii
Cocainæ hydrochloratis ..... gr. vi
Aquæ destillatæ ..... ʒi

M. Sig.—Pour into the ear from a spoon previously dipped into hot water, five or six drops, or less if perforation is present.—H. G. Miller.

℞ Cocainæ ..... gr. iiss
Aquæ camphoræ,
Aquæ destillatæ, aa ..... ʒi

M. Sig.—Instil five drops, warmed, into the ear.—Kerley.

℞ Acidi carbolici,
Glycerini,
Cocainæ hydrochloratis, aa

M. Sig.—Several drops in the ear—Ballenger.

℞ Acidi carbolici ..... gr. iii–vii
Glycerini ..... ʒi

M. Sig.—Five or six drops in the ear.—Andrews.

℞ Liquoris aluminii acetatis ..... ʒiii
Plumbi acetatis ..... gr. xxv
Aquæ ..... ʒi

M. Sig.—Instil, warmed, three or four times daily, and allow to remain in the ear for twenty to thirty minutes each time.—Burow's solution.

℞ Chloroformi ..... ʒii

Sig.—Blow the fumes into the ear through a pipe.—Ballenger.

Keep a loose pledget of cotton in the meatus; and apply hot water or hot salt bags. In the early, hyperæmic stage, many apply the artificial leech in front of and close to the tragus, or make scarifications and apply the cupping glass (*q.v.* in Part 1), and extract from two to four ounces of blood.

Should the drum-membrane bulge, or should the pain and fever persist over twelve hours in spite of the foregoing analgesic and antiphlogistic treatment, incise the membrane freely by means of a crucial or V-shaped incision at the most bulging portion, or a curved incision, posterior to the malleus handle, parallel with the margin of the membrana, and down to the bottom of the meatus. Where there is bulging in the upper and posterior quadrant, carry the knife well up into the attic, and incise to the bone, then carry the knife backward to the periphery of the drum-membrane, and out for one-quarter inch along the posterior wall of the bony meatus, down to the bone (Bacon), but some do not advise this for fear of extending the infection, especially in streptococcus cases. Before incising the drum membrane, syringe the meatus with warm bichloride solution, 1 : 5000, dry with sterile absorbent cotton, and anæsthetize the membrana with the following preparation, viz., equal parts of cocaine crystals, carbolic acid crystals, and menthol crystals, rubbed together in a mortar into a syrupy fluid and applied warm (anæsthetization is produced in twenty minutes); or administer chloroform, ether, or nitrous oxide gas. In using the otoscope or ear speculum, straighten the canal by pulling the auricle outward, backward and

upward in adults, downward in infants and children.

After the incision, Politzer inserts a sterile gauze wick for drainage, which is changed twice daily; he avoids syringing. Dench, on the other hand, employs frequent irrigations, at two hourly intervals, with warm bichloride solution, 1 : 6000, or boric acid solution, ʒi–iv ad Oi, or warm, boiled water, in order to encourage bleeding.

As soon as pain has subsided commence inflations of the tympanum by Politzer's method or by catheterization of the eustachian tube (*q.v.*), with the object of (1) separating inflamed surfaces, and thus preventing or breaking down adhesions; (2) draining the tympanum; and (3) maintaining the patency of the eustachian tube, thus preventing or relieving congestion of the aural mucous membrane due to rarefaction of air within the tympanic cavity. Employ inflation at first every one to three hours, gently, and later once a day, then every other day, and so on, as required. For a few minutes before, and also during inflation, incline the patient's head strongly forward and a little toward the opposite side, so as to favor drainage from the tube.

Pneumomassage, by means of Siegle's otoscope, the Delstanche masseur, or a rubber tube, "through which alternating compression and rarefaction may be produced with the mouth" (Ballenger), may also be employed, for the purpose of lessening vascular engorgement and preventing ankylosis of the ossicles.

Where the improvement in hearing, following inflation, is only of short duration, the drum membrane should be incised, and inflation continued, at first two or three times a week, later every eight to fourteen days, until a cure results. In such cases a pledget of sterile cotton should be placed in contact with the membrane at each inflation to catch and hold the secretion as it is forced through the perforation. Or, one may employ Blake's middle-ear syringe, and a warm saturated solution of boric acid (4 per cent.) to wash out the middle ear; and if the tympanic mucous membrane is thickened, as revealed by inspection, one may instil, through the syringe or a glass middle-ear pipette, a few drops of a solution of silver nitrate, 2 per cent., or zinc sulphate, 4 per cent. If the secretion is tough and stringy, it may be necessary to inject into the middle ear, through the drumhead incision, or through the eustachian catheter (see Inflating the Tympanum) a very weak (1 per cent.) warm, sterile solution of sodium bicarbonate.

In order to "hasten the absorption of residual fluid," vapors may be forced through the eustachian catheter into the middle ear, using Roosa's, Lucæ's, Dayton's, or Dench's middle-ear vaporizer, and tincture of benzoin, oil of eucalyptus, menthol, camphor, or oil of cloves, ʒi of any of the preceding to ʒi of alcohol, or of tincture of iodine, or oil of eucalyptus and pine-needle oil, equal parts; or alcohol; or tincture of iodine; or chloroform; or ether, the latter in very small quantities, because it is irritating.

For obstinate swelling of the tube, employ local medication. After administering an air douche, inject into the eustachian catheter, with a Pravaz syringe, eight to ten drops of one of the following solutions, viz., solut. zinci sulphatis concent., ♏iii, ad aquam ʒiiss; Burow's solution (see Part 11), 1 ad aquam 5; solut. ac. tannici, 1 to 2 per cent.; zinc-olein, ♏v ad sterilized liquid vaseline, ʒi; iodi puri, gr. ivss, potassii iodidi, gr. xlv, glycerini puri, ʒiiss–v. Several injections of sodium bicarbonate, 3 : 10 to 20, may have to be made preceding the above applications. A good plan is to give the air douche and medicated applications on alternate days. (Politzer.)

When inflation is difficult, as ascertained by means of the diagnostic tube, introduce medicated bougies into the tube. Politzer employs the thinnest catgut violin strings, impregnated with a concentrated solution of silver nitrate (1 : 10). "These are dried and pushed through the catheter as far as the isthmus tubæ (about one inch), where they are allowed to remain three to five minutes." This is repeated every two or three days, and "often after the third or fourth introduction, air may be forced through the eustachian tube by Politzerization." (See also Dench's method of dilating the tube, described under Otitis Media Catarrhalis Chronica.) Employ also massage of the neck between the ramus of the inferior maxilla and the mastoid process, for two or three minutes at a time.

Energetic sweat cures and a change to a dry climate are recommended for very obstinate cases (see also Otitis Media Catarrhalis Chronica, the moist form).

For the relief of persistent and distressing tinnitus, which will eventually disappear, prescribe the bromides (Part 11) in large doses.

Prophylaxis Against Aural Catarrh.—Fresh air day and night, avoiding draughts, best an out-of-door life; adequate clothing, including woolen under-garments, dry stockings and good shoes; the avoidance of overheated rooms; sponging of the neck and

chest every morning with cold water (while standing in warm water in a warm room), followed by vigorous rubbing with a coarse towel; the correction of all possible etiological factors, especially adenoids in children; the avoidance of large doses of quinine; stopping the ears with absorbent cotton saturated with vaseline when bathing in the sea.

Otitis Media Catarrhalis Chronica.—L. *chrónicus*, from Gr. χρόνος time. The characteristic symptoms of chronic aural catarrh are deafness (*q.v.*) and tinnitus, without pain, of gradual and insidious onset, except when following acute otitis media.

There are two distinct types of the disease: (1) a moist, or exudative, or hypertrophic type, with hyperæmia and swelling of the mucous membrane, which may be followed by the formation of adhesions and ankylosis of the ossicles, and which commonly occurs in males between the ages of fifteen and thirty-five years; and (2) a dry or hyperplastic, or sclerotic type (otosclerosis), with fibrous interstitial changes, "usually limited to the neighborhood of the fenestra ovalis and rotunda," but which may begin in the labyrinth and which commonly occurs in females between the ages of forty and fifty years.

In the moist type, the chronic hyperæmia and turgescence involve the eustachian tube and cause its closure, with resulting rarefaction of air in the tympanic cavity and retraction of the drum membrane. The latter appears lustreless and thickened, and may contain chalky deposits; the long handle of the malleus appears foreshortened, the short process and posterior fold prominent, and the cone of light distorted.

In the sclerotic type, on the other hand, the eustachian tube is patent, and may even be abnormally wide, and atrophy of the mucous membrane is also commonly present. Occasional pain may occur. As a rule, the patient hears better in a noise.

Employ Siegle's otoscope and the probe to test the mobility of the drum-membrane and for the presence of adhesions; and employ Politzerization (*q.v.*) and the diagnostic tube to determine the permeability of the eustachian tube.

Etiology.—Chronic moist catarrh of the middle ear may follow the acute form (*q.v.*, for causes), or it may develop insidiously as a consequence of frequent "colds," alcoholism, or poor health. In otosclerosis, heredity is perhaps an important etiological factor; it may follow the hypertrophic form of catarrh, rarely purulent otitis media; physical and mental debility and psychic shock may be factors; also altered ductless gland secretion, or focal infection.

Prognosis.—The prognosis under treatment in cases which show even a very slight improvement following inflation of the middle ear (moist type) is favorable; the prognosis in the sclerotic type is unfavorable.

Treatment of the Hypertrophic Variety of Chronic Aural Catarrh.—Attend to the general health and to the nose and throat (see Parts 8 and 9 on Nose and Throat Diseases). Remove all obstructions to breathing, *e.g.*, adenoids, enlarged tonsils, hypertrophy of the turbinates, deviation of the septum, etc. When prescribing gargles, instruct the patient to lie upon the back so as to allow the fluid to enter the epipharynx. Remove any granulation tissue or adhesive bands in Rosenmüller's fossa with the finger nail. Silver nitrate, ℥i ad ℥i, applied upon a cotton-tipped probe to the epipharynx through the anterior nares, following cocainization (4 per cent.), is also effectual in removing granulations or adenoids (Dench). Restrict or prohibit the use of alcohol or tobacco.

Treatment of the moist variety of chronic aural catarrh aims at the restoration of the normal patency of the eustachian tube, the relief of turgescence within the tympanum and tube, and the prevention or breaking down of adhesions.

Practice inflation of the tympanum by Politzerization or catheterization (see Inflating the Middle Ear), followed by the introduction of various antiseptic and stimulating vapors into the middle ear and tube. If catheterization is employed, drop about five or six minims of the medicament into the Politzer bag, and connect the latter with the catheter (always before the latter's introduction into the eustachian tube), by means of rubber tubing at least a foot long; or employ Roosa's, Lucæ's, Dayton's, or Dench's middle ear vaporizer, in which is placed a pledget of cotton saturated with the medicament. If Politzerization is employed, pour the drops on absorbent cotton in a glass inhaler attached to the Politzer bag. The following vaporising mixtures are recommended, viz., tincture of benzoin, oil of eucalyptus, menthol, camphor, or oil of cloves, ℥i of any one of the preceding to ℥i of alcohol or of tincture of iodine; oil of eucalyptus and pine-needle oil, equal parts; alcohol; tincture of iodine; chloroform; ether (in very small quantities, because it is irritating); tincture of iodine, gt. xv, chloroform and alcohol, aa ℥ss; menthol and camphor, aa ℥i, with tincture of iodine ad ℥i.

Employ inflation at first daily, and later three times a week, for about six weeks, followed by a period of rest. But little force should be used at first for fear of rupturing an atrophic drum membrane. For a few minutes before and also during inflation, have the patient's head inclined strongly forward and a little toward the opposite side, so as to favor drainage from the tube.

Pneumomassage by means of Siegle's otoscope, the Delstanche rarefacteur or masseur, the electromotor masseur (see under Treatment of the Hyperplastic Variety), or a rubber tube, "through which alternating compression and rarefaction may be produced with the mouth" (Ballenger), may also be employed, for the purpose of lessening vascular engorgement and preventing ankylosis of the ossicles. These instruments should be used cautiously and judiciously, under inspection of the drum-head, when atrophic changes are present in the latter.

Massage of the middle ear may also be practiced by the patient several times a day, using the moistened finger tip, with the nail posterior, like a piston. This is useful for the relief of tinnitus, etc. Reading to the patient for five to fifteen minutes at a sitting is a method of massage advocated by Dench.

Where the improvement in hearing following inflation is only of short duration, incsie the drum membrane and continue the inflations. In such cases a pledget of sterile cotton should be placed in contact with the membrane at each inflation so as to catch and hold the secretion as it is forced through the perforation. If the mucus is tough and stringy, first inject into the tympanic cavity through the drum head incision a very weak (1 per cent.), warm, sterile solution of sodium bicarbonate, or irrigate the middle ear through the eustachian catheter, with warm, sterile normal salt solution (℥i ad Oi). The latter procedure, however, may excite a purulent otitis media.

One may employ Blake's middle ear syringe and a warm, saturated solution of boric acid (4 per cent.) to wash out the middle ear; and if the tympanic mucous membrane is thickened, as revealed by inspection, one may instil, through the syringe or a glass middle ear pipette, a few drops of a solution of silver nitrate, 2 per cent., or zinc sulphate, 4 per cent.

Liquid vaseline, or albolene, or a 2 per cent. solution of pilocarpine, or the two latter combined, or the following mixture, viz., sodium bicarbonate, gr. x, glycerine, ♏viii, and distilled water, q.s., ad ℥i (Politzer), may be injected into the middle ear through a catheter two or three times a week, only when the drum membrane is perforated. Five to eight drops of the warmed, sterile fluid is first injected into the sterilized eustachian catheter, which is clamped in place. The fluid is then forced into the middle ear by means of the Politzer bag, care being taken to keep the patient's head erect during the inflation. Always inflate the tympanum with air two or three times before injecting the fluid.

For obstinate swelling of the tube, employ local medication; After administering an air-douche, inject into the eustachian catheter, with a Pravaz syringe, ten drops of one of the following solutions, viz., solut. zinci sulphatis concent., ♏iii ad ℥iiss; Burow's solution (see Part 11), 1 : 5; solut. ac. tannici, 1 to 2 per cent.; zinc-olein, ♏v, ad sterilized liquid vaseline, ℥i; iodi puri, gr. ivss, pot. iodidi, gr. xlv, glycerini puri, ℥iiss–v. Several injections of sodium bicarbonate solution, 3 : 10 to 20, may have to be made preceding the above applications (Politzer). Dench, before employing local medication, first cleanses the pharyngeal orifice of the tube by irrigation with Dobell's solution (Part 11) or boric acid or sodium bicarbonate solution, ℥i–iv ad Oi, through a eustachian catheter with closed extremity and lateral perforations; or by means of a pledget of cotton upon an applicator curved like the eustachian tube. He then touches the pharyngeal orifice of the tube with silver nitrate, gr. x–xxx ad ℥i; or comp. tincture of iodine and glycerine, equal parts. A good plan, says Politzer, is to give the air-douche and medicated applications on alternate days.

When inflation is difficult, as ascertained by means of the diagnostic tube, introduce medicated bougies into the tube. Dench employs the following device: a No. 5 piano wire is bent and flattened upon itself at one extremity for a distance of about $\frac{1}{16}$ inch. The wire is then passed through the eustachian catheter until the bent extremity protrudes $1\frac{1}{2}$ inches (the average length of the eustachian tube). The proximal end of the wire is then bent at a right angle to prevent its passing farther through the catheter. "A little cotton is then wound tightly about the doubled extremity of this wire, which is then drawn backward into the catheter, so that the cotton-tipped end protrudes just beyond the mouth of the instrument. The catheter is then introduced into the mouth of the tube in the ordinary way, and the cotton-tipped bougie is gradually passed through the eustachian canal until

it is felt to enter the tympanum." Resistance is felt when the bougie has been introduced about an inch (the isthmus tubæ lies here), but "a moderate amount of pressure forces the instrument through the bony portion of the tube and into the tympanum." "Great care should be used in the final stage of the operation." "It is sometimes necessary to carry the instrument a little further (than 1½ inches) in order to be certain that it has entered the tympanum." This event is recognized by the sense of touch. The cotton pledget may be saturated with a solution of silver nitrate, gr. x–lx ad ℥i. In using bougies, take care not to lacerate the tissues and thereby produce an interstitial emphysema.

Politzer employs the thinnest catgut violin strings, impregnated with a concentrated solution of silver nitrate. These are dried and pushed through the catheter as far as the isthmus tubæ, where they are allowed to remain three to five minutes." This is repeated every two or three days, and "often after the third or fourth introduction, air may be forced through the eustachian tube by Politzerization." Employ also massage of the neck between the ramus of the inferior maxilla and the mastoid process, for two or three minutes at a time. Massage of the eustachian tube may also be accomplished by means of the Weaver masseur.

Remember that "to continue the treatments longer than improvement of the hearing distance increases often leads to ill effects." Indeed, Dench and others believe that the measures designed to increase the mobility of the ossicles probably only stretch the drum-membrane and do harm.

Such operations as tenotomy of the tensor tympani muscle; division of a tense posterior fold of the drum membrane (plicotomy), repeating several times, if necessary, division of interossicular and ossiculo-tympanic adhesions; the separation from the internal wall of the tympanum of an adherent drum membrane; the establishment of a permanent opening in the drum membrane when the latter alone is at fault (such an opening is very difficult to maintain); and the restoration of the tension of a relaxed drum-membrane by applying a moistened, thin paper disk over the relaxed area, are effectual only in rare cases.

Where other measures fail, and the labyrinth is not greatly involved (*i.e.*, no marked lowering of the upper tone-limit is present: see Hearing Tests), Dench practices and advocates an exploratory tympanotomy, under local anæsthesia, carrying out hearing tests during the exploration. He turns down a large flap of the posterior superior segment of the membrana vibrans. If the opening causes no great improvement in the hearing, he disarticulates the incudo-stapedial joint. If no improvement follows, he divides the stapedius tendon and any adhesions present in the oval niche, by means of stellate incisions, in order to free the stapes. He also divides adhesions in the round window by means of stellate incisions. If liberation of the stapes improves the hearing, he removes the membrana tympani, malleus, and incus to secure improvement. If the stapes, as tested with a cotton-tipped probe, is fixed, Dench removes it by means of a sharp spoon or a small conical burr, "so guarded as to prevent its entering the labyrinth more than a millimetre, when the foot plate is perforated"; or he leaves the stapes and removes the malleus, incus, and drum membrane, and tries later several times to mobilize the stapes by the division of adhesions about the stapes and the round window. Should the drum membrane reform, it should be removed until it ceases to reform.

For distressing tinnitus, one may prescribe dilute hydrobromic acid, gtt. xv–lx, in water, t.i.d., or fluid extract of ergot, gtt. x, in water, t.i.d.

Artificial aids to hearing, in the form of ear trumpets (the small London hearing horn is a good one), or the ear telephone with pocket battery, are used chiefly in incorrectible senile cases.

Treatment of the Hyperplastic Variety of Chronic Aural Catarrh.—One may employ gargles, inflation, vaporization, pneumomassage, etc., as described in the treatment of the hypertrophic form. Massage of the eustachian tube by means of a tube introduced as far as the isthmus (see under Inflating the Middle Ear) and then moved in and out like a piston for a few seconds, may be of benefit. The long continued administration of strychnine, gr. $\frac{1}{40}$, t.i.d., gradually increased to gr. $\frac{1}{20}$, four times daily, (see Part 11) is said to be valuable in neurasthenic and senile cases. Potassium iodide is recommended. For distressing tinnitus, employ dilute hydrobromic acid, gtt. xv–lx, in water, t.i.d. For labyrinthine involvement is recommended pilocarpine, gr. $\frac{1}{8}$ to $\frac{1}{6}$, two or three times daily, by mouth, the dose to be gradually increased by one drop at a time until a moderate increase of perspiration and saliva follows each dose (the patient being warned to avoid draughts for 1½ hours after each dose). The pilo-

carpine should be continued for two months, and if some improvement is then noted, it should be continued for four to six months. (Dench.)

In cases in which the labyrinth is not materially involved, and in which the use of vapors, massage, etc., causes no improvement within four to six weeks, one may resort to Dench's exploratory operation referred to under the hypertrophic form.

The "typical otosclerosis," according to Politzer, is primarily a disease of the labyrinthine capsule, resulting in bony ankylosis of the foot-plate of the stapes, and is not necessarily associated with middle-ear catarrh. Its treatment, therefore, is nearly hopeless. The only treatment, says Politzer, that promises results, and these only temporary, is pneumo-massage by means of the electro-motor masseur, in the early stages of the disease. "The massage must be given only from a half to one minute, and two or three times a week for a period of four or five weeks, which must be followed by a rest of several months." "The vibrations must follow each other with great rapidity, but their amplitudes must be slight and the motion of the piston must be 1 mm., and not more than 4 mm."

The small London hearing horn and the ear telephone with pocket battery are useful in incurable cases.

Otitis Media Purulenta Acuta.—L. *pus, pur'is,* pus; *purulentus,* purulent. The symptoms of acute suppurative otitis media are more intense than those of the catarrhal form. There are intense pain, pyrexia, headache, constipation, deafness, and perhaps tinnitus and vertigo, due to increased intratympanic pressure. Except in tuberculosis, the drum-head is markedly congested (before inspection, remove any white, dead epithelium from the drum-head with a cotton-tipped probe), and perforation soon occurs, followed by a purulent discharge. In tuberculosis the discharge is "apt to be thin and watery"; in influenza, "sticky and sero-sanguinolent" (Bacon). The presence of a perforation may usually, but not always, be detected by the whistling sound heard through the diagnostic tube during inflation of the middle ear; the normal sound is soft and blowing. Siegle's otoscope and the Valsalva method of inflating the middle ear (*q.v.*) may also be used to detect a perforation.

The affection may terminate in cure in from three or four weeks to several months, or be followed by chronic aural catarrh, adhesive processes, chronic suppuration, caries and necrosis of the tympanic walls and ossicles, mastoiditis, labyrinthitis, sinus thrombosis, septicæmia, meningitis, extradural or brain abscess (see under Mastoiditis Interna).

"Six weeks of daily inspection and appropriate treatment will, in most cases, result in a complete cure," says Ballenger.

Etiology.—This is the same as that of the catarrhal form (*q.v.*). Colds, measles, scarlet fever, and influenza are particularly important causes (see Prophylaxis). Other causes are paracentesis of the drum-head, caustic applications, improper instrumentation, irrigation of the tympanum, blows on the ear, operations on the nose, etc.

The disease may be suppurative at the start, or it may develop upon an acute catarrhal inflammation. The following germs are causal; streptococci, staphylocci, pneumococci, Vincent's spirillum, bacillus coli, bacillus pyocyaneus, bac. diphtheriæ, bac. tuberculosis, Friedländer's bac., etc. Streptococcic and pneumococcic cases are severe, and tend to invasion of the mastoid cells; staphylococcic and other infections are usually mild.

Treatment.—Put the patient to bed on light diet with plenty of water, say in the form of lemonade, and open the bowels by means of small, frequently repeated doses of calomel, followed by a saline or castor-oil. If the pulse is full and hard, aconite (see Part 11 for all drugs) is prescribed by many. If there is a profuse nasal or naso-pharyngeal discharge (coryza), Gorham Bacon prescribes tincture of pulsatilla in drop doses alternately with the tincture of aconite. Aspirin, salol, or sodium salicylate is recommended for the promotion of diaphoresis. Codeine or phenacetin may be given for the relief of pain, together with instillations of one of the analgesic and antiphlogistic preparations given under Otitis Media Catarrhalis Acuta; or the ear may be douched every hour or two with a warm solution of boric acid, ʒi–iv ad Oi. The nares and nasopharynx should, of course, receive attention (see Part 8 and 9 on Nose and Throat Diseases). Instruct the patient to gargle in the supine position, with the head low, so that the fluid will reach the epipharynx Apply hot-water or hot salt bags to the ear. In the early congestive stage, some apply the artificial leech in front of and close to the tragus, or, in mastoid involvement, over the antrum or the mastoid tip, and extract two to four ounces of blood.

Incise the drum-head as soon as bulging is apparent, or when the pain and fever persist

after twelve hours in spite of the above analgesic and antiphlogistic treatment. First syringe the meatus with warm bichloride solution, 1 : 5000, dry with sterile absorbent cotton, and anæsthetize the membrana with the following preparation, viz., equal parts of crystals of cocaine, carbolic acid, and menthol, rubbed together in a mortar until a syrupy fluid is formed, and applied warm (anæsthesia is produced in twenty minutes); or administer chloroform, ether, or nitrous oxide gas. Incise the membrane freely, by means of a crucial or V-shaped incision at the most bulging portion, or a curved incision posterior to the malleus handle, parallel with the margin of the membrana, and down to the bottom of the meatus. Where there is bulging in the upper and posterior quadrant, carry the knife well up into the attic, and incise to the bone, then carry the knife backward to the periphery of the drum-membrane, and out for one-quarter inch along the posterior wall of the bony meatus, down to the bone (Bacon, Dench), but some do not advise this for fear of extending the infection, especially in streptococcus cases. In using the otoscope or ear speculum, straighten the canal by pulling the auricle outward, backward, and upward in adults, downward in infants and children.

Where spontaneous perforation has occurred, it is advisable to enlarge the opening.

John Guttman has lately devised a special trephine for opening the drum-membrane, made by E. B. Meyrowitz, New York. With one or two turns of the trephine, a hole is pierced through the lower posterior quadrant, no matter where the drum-membrane may be bulging. After incising the drum-head, douche the ear every hour or two with warm, sterile normal saline solution (℥i ad Oi), or boric acid solution, ℥ii ad Oi, or bichloride solution, 1 : 5000, the latter if the infection is virulent, followed each time by the insertion of a strip of boric acid or iodoform or plain sterile gauze down to the membrana tympani. If the discharge is thick and tenacious, syringe the meatus with a warm, sterile solution of sodium bicarbonate, aided by suction with Siegle's otoscope, and cautious inflation (*q.v.*). The perforation in the drum-head should, however, be large before the latter is attempted. Politzer recommends daily Politzerization, beginning on the third or fifth day after the discharge has made its appearance, the nares and pharynx being first cleansed each time with normal saline solution. After the more acute symptoms have subsided, continue to syringe the meatus several times a day, and gently wipe away all discharge with a cotton-wound probe; a 5 per cent. aqueous solution of hydrogen peroxide may be poured into the ear to break up the discharge, after which it is more readily wiped away. Then instil a warm, boiled, saturated solution of boric acid (4 per cent.); or insufflate a minute quantity of finely powdered boric acid.

If the discharge persists, instil twice a day 15 to 20 drops of zinc sulphate, 2 to 4 per cent., or copper sulphate, 10 to 15 grains to the ounce, or lead acetate, 3 to 8 grains to the ounce, or persulphate of iron, diluted or full strength, and allow the astringent fluid to remain in the ear fifteen minutes; or irrigate the tympanum through the eustachian tube (*q.v.*) daily by means of a fountain syringe under low pressure with a warm, boiled solution of boric acid, ℥i–iv ad Oi, followed by Politzerization. For the treatment of granulations and polypi, see Aural Polypi and Granulations.

The treatment of facial paralysis due to suppurative otitis media is that of the primary affection.

After the perforation has closed, have the patient wear a small pledget of cotton in the meatus for a time, and inflate the tympanum several times a week until the hearis entirely restored. A tonic may be given, if deemed advisable, and the patient should be cautioned against catching cold.

Prophylaxis.—Fresh air day and night, avoiding draughts, best an out-of-door life; adequate clothing, including woolen undergarments, dry stockings and good shoes; the avoidance of overheated rooms; sponging of the neck and chest every morning with cold water (while standing in warm water in a warm room), followed by vigorous rubbing with a coarse towel; the correction of all possible etiological factors, especially adenoids in children; the avoidance of large doses of quinine; stopping the ears with absorbent cotton saturated with vaseline when bathing in the sea.

In the acute infectious diseases, particularly measles, scarlet fever, and influenza, the naso-pharynx should be sprayed with a solution of boric acid, ℥i–iv ad Oi, or carbolic acid, gr. v ad ℥i, or Dobell's solution (Part 11), or bichloride, 1:5000, and an early free incision of the drum-head made, should the middle ear become infected (see Otitis Media Catarrhalis Acuta).

Otitis Media Purulenta Chronica.—An aural discharge lasting three months means the existence of a chronic suppurative otitis media. The latter may be present, however, without the appearance of a discharge, in

cases in which the discharge is so slight as to dry up before reaching the external meatal orifice. Perforation of the drum membrane, which, of course, is always present, can usually, but not always be detected by the high and hissing sound ("perforation whistle") heard through the diagnostic tube during inflation of the middle ear, performed either by Valsalva's or Politzer's method, or by catheterization (see Inflating the Middle Ear). The normal sound is soft and blowing. If fluid is present, moist râles may be heard. Siegle's otoscope may also be employed to detect the presence of perforation. By its use, a small drop of pus may possibly be seen exuding through the perforation. This instrument is also useful for the detection of adhesions. After thoroughly cleansing the meatus and deeper parts with cotton pledgets, use a probe to explore for adhesions, granulations, and rough, necrosed bone.

The causes of chronic middle ear suppuration are the same as those of the acute catarrhal or suppurative forms (*q.v.*), from which the chronic form develops. Adenoids are of special etiological importance. Tuberculosis and syphilis are sometimes causal.

Prognosis.—The disease may eventuate in (1) cure with complete restoration of hearing; (2) more or less deafness due to adhesions and thickening of the mucous membrane; (3) cholesteatoma formation; (4) bone necroses and their sequelæ, viz., continuous discharge, mastoiditis, labyrinthitis, meningitis, extradural or brain abscess, sinus thrombosis, septico-pyæmia, hemorrhage from the internal carotid artery or internal jugular vein (see under Mastoiditis Interna). The prognosis is favorable in healthy individuals, and in cases with a central perforation, no granulations, a permeable eustachian tube, and a moderate, non-fetid, purulent discharge. It is less favorable in the contrary cases, in those secondary to scarlet fever, measles, influenza, typhoid fever, tuberculosis, syphilis, diabetes, leukæmia and other cachexias, and in those associated with chronic nasopharyngeal affections, stricture of the external meatus, cholesteatoma, and paresis or paralysis of the facial nerve.

Treatment.—The general health should, of course, receive attention. Prescribe a nutritious diet, fresh air day and night, regulation of the bowels, adequate rest and exercise, adequate clothing, a daily morning warm bath before breakfast in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, and tonics (iron, arsenic, codliver oil, hypophosphites, potassium iodide, etc.), as indicated (see Drugs, Part 11). Interdict the use of alcohol and tobacco.

Endeavor to correct any possible etiological influence, such as adenoids, hypertrophied tonsils, hypertrophied turbinates, septal deflection, disease of the posterior ethmoidal or sphenoidal sinuses, etc. (see Nose and Throat Diseases). Treat an epipharyngitis with weak silver solutions.

A marginal perforation generally indicates bone necrosis; a central perforation, a simple suppurative process, probably of tubal original. "If the tubal infection is due to a constriction at the isthmus of the tube (as evidenced by the absence of a perforation whistle, although a perforation is invisible), the tube should be dilated with bougies, and astringent and antiseptic solutions forced through it with a Weber-Liel catheter." (Ballenger.)

Two, three, or four times a day, if the discharge is profuse, otherwise once a day, inflate the middle ear per tubam by means of Politzer's or Valsalva's method or the catheter (see Inflating the Middle Ear), and produce rarefaction of the air in the external meatus by means of Siegle's otoscope, for the purpose of expelling and aspirating the secretion from the middle ear. Follow this procedure by gently syringing the canal, or if need be, the middle ear directly, the latter by means of Blake's middle-ear cannula, with warm, boiled water, or sterile norm. sal. sol. or boric acid solution, ℥i-iv ad Oi, or alum. acet. 2 to 3 per cent., or, if the discharge is foul, carbo. ac., 2 per cent., or lysol, 10 to 15 drops to the half pint, or formalin 10 to 15 drops to the quart of boiled water, or potass. permang., 1:2000, or bichl., 1:8000 to 1:5000. The latter is used in virulent cases, *e.g.*, scarlet fever, diphtheria, influenza, etc., and should be used with care, especially in children, since the fluid may escape into the pharynx; therefore employ little force in syringing, and incline the patient's head toward the affected side. If the discharge is profuse or blenorrhœic, Politzer uses oil of turpentine, 4 to 5 drops to 0.3 litre of warm boiled water.

In syringing or performing other manipulations within the canal, straighten the latter by drawing the auricle upward, backward, and outward in adults, and in children outward and downward. Insert the nozzle of the syringe within the canal as far as possible, and direct it toward the tip of the nose in adults, and upward and inward in children. If the syringing is done by the patient, supply him with a soft rubber ball-syringe.

After syringing the canal, cleanse it further by means of small, sterile cotton

pledgets on a cotton-carrier, pushing the cotton down to the membrane and rotating it, so that a clear view of the membrana tympani may be obtained. Then fill the external meatus with warm hydrogen peroxide, to which may be added alcohol or boric acid. Now introduce into the meatus the nozzle of a rubber tube attached to a small rubber air-bag, and by alternately rarefying and condensing the air within the canal, drive the antiseptic fluid into all parts of the tympanic cavity; or, with the external meatus filled with the antiseptic fluid, and the head inclined to the opposite side, inflate the tympanum by Politzer's method; or press the tragus over the external meatus and inward, so as to force the fluid into the middle ear. If the perforation is in the anterior portion of the membrana, incline the head a little backward as well as to the opposite side.

By this treatment the suppuration may often be arrested in one or two weeks in uncomplicated cases.

If no decided lessening of the discharge is noted, insufflate daily, or every other day, through a speculum, with a powder-blower, a minute quantity, never large amounts, of finely powdered boric acid, or zinc oxide, or equal parts of each, or boric acid and alum, equal parts, or iodoform, or boric acid and iodoform, equal parts. Powders are not so good, however, where there is much mucus, where caries or granulations are present, or where there is marked desquamation in the external meatus. Indeed, granulations should be destroyed before beginning any other treatment: After cleansing the canal and cocainizing the granulations with a warm 4 to 10 per cent. solution of cocaine, or powdered cocaine applied on the moistened end of a probe (in children administer ether or chloroform), apply liquor ferri chloridi, or a 10 per cent. solution of trichloracetic acid, on a probe, a small brush, or a ball of cotton-wool, taking extreme care not to touch any other parts but the granulations, and to avoid the promontory. The cauterization should not be repeated until after the eschar has fallen off. Politzer prefers the galvanocautery to chemical caustics, but it should not be used in the tympanum. The parts are first anæsthetized with powdered cocaine applied on the moistened end of a probe. "The circuit should be closed only when the cautery is in contact with the growth; and before each cauterization the point must be thoroughly heated." Small sharp spoons, sharp curettes, or ring-knives may be employed, after applying powdered cocaine on the moistened end of a probe, and locating the root of the polypus with a blunt probe curved at the end at a right angle. These instruments are also useful in scraping necrosed bone, which is often concealed by large, flabby granulations. After curetting, apply adrenalin solution, 1 : 1000, on a pledget of cotton, to check hemorrhage. Then dry the parts, and cauterize the base or stump of each granulation or polypus with silver nitrate or chromic acid fused on the end of a probe by dipping the red-hot probe in the powdered caustic. Then insufflate a minute quantity of finely powdered boric acid and zinc oxide, equal parts. It may be necessary to enlarge the perforation in the drum membrane in order to reach intratympanic polypi. Polypi in the attic may sometimes be diagnosed by means of a small tympanic mirror, and removed with a small curette bent at a right angle with the handle. Large granulations and polypi may be removed with Blake's cold wire snare.

Of particular value where there are granulations, and where the discharge is curdy, is the instillation, two or three times daily, of warm alcohol. By virtue of its dehydrating qualities it causes the granulations to shrink. It should at first be diluted with an equal quantity of water, and its strength gradually increased. To avoid pain, pour in two or three drops first, and the rest, about thirty drops, one-half to one minute later; allow it to remain in the ear twenty to thirty minutes. Boric acid, gr. xx to the ounce, or carbolic acid, gr. xv to the ounce, may be added. Before instilling the alcohol, the ear should be cleansed and dried. The alcohol treatment is valuable when operative measures are not feasible or are refused. Two to six weeks or longer of this treatment are required to cause the polypi completely to disappear. Alcohol is contraindicated in bone caries and in acute intercurrent inflammation.

When, following any form of treatment, the discharge becomes scanty, allow a week's rest, in order to see if the discharge will not cease. In other words, do not overtreat the case.

In cases in which the discharge is scanty and not fetid, the dry treatment may be tried. The tympanum is first inflated with air so as to drive the secretion into the external meatus, from which it is removed with a sterile cotton-wound applicator. A strip of sterile gauze, which may be impregnated, if desired, with boric acid, salicylic acid, bichloride of mercury, tannin, or iodoform, etc., is then introduced with forceps into the tympanic cavity, if possible, and changed aseptically from one to three times daily, according to the amount of discharge,

the canal being wiped out each time. The dry treatment is contraindicated " when there is a septic, curdy secretion, in desquamative processes, polypi, caries, and great irritability of the lining membrane of the canal and middle ear." (Politzer.)

Where there is a large perforation, the caustic treatment may be tried. After carefully syringing the canal, wipe it out with sterile cotton, and instil 5 per cent. cocaine solution. Wipe this out, and then instil 15 to 20 drops of warm, concentrated silver nitrate solution. After two or three minutes, syringe with warm boiled water. To prevent discoloration of the external meatus, it may be painted with a solution of potassium iodide. The caustic treatment is contraindicated in cases with extensive granulations, desquamation, caries, and a fetid secretion, and a small perforation.

Where other methods seem insufficient, one may try astringents, *e.g.*, zinc sulphate, lead acetate, or copper sulphate, gr. iii–viii, with glycerine, ʒi and if desired, boric acid, gr. xv to the ounce of water; or silver nitrate, gr. v to the ounce at first, increasing the strength if necessary; or Burow's solution (Part 11). Urbantschitsch recommends (Bacon) thigenol, two to four parts, with glycerine and alcohol, ten parts of each.

In obstinate cases, try washing out the tympanic cavity, per tubam (see Inflating the Middle Ear) with warm normal saline solution (ʒi ad Oi), or boric acid solution, ʒii–iii ad Oi, employing only moderate, gradually increasing pressure. If this is impossible, fill the external meatus with the warmed saline solution, after air-douching and syringing; then tightly insert the olive-shaped tip of the air-bag tube into the external orifice of the ear, and drive the solution through the tube into the pharynx by compressing the air-bag. (Politzer.)

Zinc ionization is recommended: After cleansing the ear, fill it with a warm solution of zinc sulphate, 2 to 4 per cent., and aspirate the air with a fine cannula in order to allow the solution to enter the middle ear. Now introduce an anodic wire wrapped in cotton-wool wet with the zinc solution, and employ three or four milliampères of current for six to ten minutes (see Ionic Medication in Part 1).

Where Sharpnell's membrane is perforated, and no neighboring caries can be discovered, treat tentatively for a month or so, as follows: After cleansing and drying the canal, and cocainizing the drum membrane by placing against it for several minutes a pledget of cotton-wool soaked in 10 per cent. cocaine solution, slowly inject into the attic, through a Hartmann or an elastic cannula, connected by means of a rubber tube 30 cm. long with a No. 3 air bag, or by means of Hewitt's apparatus, or Blake's middle-ear syringe, a solution of hydrogen peroxide, one part, in alcohol and glycerine, one part each. Retain this for fifteen minutes, with the head tilted toward the opposite side. Then dry the canal, and insert a pledget of cotton soaked in a strong solution of iodine-potassium-iodide-glycerine down to the drum membrane, and pack the canal with gauze. Repeat this treatment in ten days, if necessary. (Haug.)

If no improvement follows remove the carious ossicles and scrape the attic very cautiously, first carefully probing to ascertain whether the dura is exposed. The Schwartze-Stacke meato-mastoid operation may, however, be demanded.

If three or four weeks of conservative treatment of a chronic purulent otitis media does not materially lessen the discharge, and if, too, granulations reappear several days after their removal, then bone caries or necrosis is presumably present. The diagnosis is made by the rough feeling imparted when the diseased bone is touched with a probe (use extreme care in probing the middle ear), or when sequestra are seen in the meatus or deeper parts.

Dead bone must be removed. After syringing the canal and middle ear with antiseptic solutions, extract the malleus and incus, scrape the carious bone thoroughly, but with extreme care, and remove any loose sequestra with forceps. Bear in mind the proximity of the facial nerve and dura mater above, the internal ear, the carotid artery in front, and the jugular bulb below. Do not curette the promontory. After removing the dead bone, syringe the middle ear with bichloride solution, 1 : 5000, dry with sterile cotton, insufflate iodoform, or iodoform and boric acid, equal parts, and insert a strip of boric acid gauze in the meatus.

Where there is necrosed bone that is inaccessible to the curette, Gleason instils enzymol (containing pepsin) twice a day, after syringing with warm water. The enzymol is allowed to remain in the tympanum several hours so as to digest the dead tissue.

If no cure follows the above treatment, the radical meato-mastoid or Stacke-Schwartze operation is demanded.

A discharge may, of course, occur at any time, following ossiculectomy and curettage of the tympanum, as a result of " cold," as pointed out by Dench, but it is stopped in a few days by bichloride (1 : 8000) irrigations followed by the instillation of a few drops of an alcoholic solution of boric acid, gr. xx

to the ounce. The presence of vegetable moulds may also be responsible for a subsequent discharge.

During the course of any form of treatment, a light pledget of cotton should be kept in the external meatus. After the suppuration has ceased, instruct the patient to instil every eight to fourteen days a warm solution of equal parts of hydrogen peroxide and water, or increasing strengths of warm alcohol, the latter especially in the presence of adhesive connective tissue formation; and have him keep a loose plug of cotton-wool in the external meatus, and avoid the entrance of water into the ear while bathing.

As a sequel of chronic suppuration in the middle ear, the epithelium of the external meatus and middle ear may desquamate and form "structureless, incoherent masses" and "circumscribed tumors composed of concentric stratified lamellæ," mixed with fat globules and crystals of cholesterin (cholesteatoma). The accumulations are whitish-yellow, and impart a doughy feeling on probing; they possess a foul odor; frequently, small, gritty lumps or large, whitish-yellow strings appear in the water after syringing. They may be found in any part of the middle ear spaces, particularly the mastoid cells. They may even be forced into the Haversian canals, which may possibly explain their frequent recurrence after operative removal. A cholesteatoma may undergo spontaneous expansion with consequent pressure necrosis of the surrounding parts. It may cause death through pyæmia, meningitis, epidural and brain abscess, or sinus phlebitis.

When the gritty lumps of cholesteatoma appear in the aural discharge, associated with frequently recurring pain in the mastoid, the latter contains cholesteatoma, and should be opened up by means of the radical, or Stack-Schwartze meato-mastoid operation. This operation is urgently indicated when headache, dizziness, and pyæmic symptoms occur.

In the absence of mastoid symptoms, endeavor forcibly to syringe out the cholesteatomatous masses, after first loosening them with a blunt probe. If the perforation in the drum membrane is too small, it should be enlarged. A fine cannula is attached to a syringe, and is introduced into the deeper parts of the meatus, or into the middle ear. If the meatus is narrowed, an elastic tympanic catheter should be pushed through the stricture into the deeper parts; but operative measures are usually required in these cases. The Hartmann cannula, in conjunction with spoons bent to a right angle at the end, may be employed, using air and fluid injections, to remove cholesteatomata from the attic. Slowly washing out the middle ear per tubam with warm, sterile normal saline solution (℥i ad Oi) may also be resorted to.

If the foul-smelling discharge continues after several months of treatment, the malleus and incus may be extracted (in the absence of indications for a radical meato-mastoid operation), to permit freer access to the attic; and if necessary, as much as possible of the margo tympanicus and posterior upper wall of the bony meatus may be chiseled away "in order to gain ready access to the attic, aditus, and if necessary, the mastoid antrum." The operation is performed through the external meatus without detaching the auricle, and either general or local periosteal anæsthesia is employed. The operation is described on p. 480 in Politzer; the method of producing periosteal anæsthesia is described on p. 534.

After removing the epidermic masses, instruct the patient to irrigate the ear once or twice a week with normal saline solution, after instilling diluted glycerine to soften up the masses, and then to instil hydrogen peroxide, 1 : 10, and report to the physician for examination every three or four months (Politzer). For indications for the radical meato-mastoid operation, see under Mastoiditis Interna.

In considering the advisability of closing a perforation of the drum membrane, first stop it with a drop of thin glycerine on the end of a probe, if the perforation is small, or with a piece of moistened paper, if it is large; and then test the hearing; for the closure of the perforation may increase the deafness.

To close the perforation, first cocainize the drum membrane by means of a piece of cotton soaked in 10 per cent. sterile cocaine solution, which is allowed to act ten minutes; then dip a silver probe covered with a thin layer of cotton into a concentrated solution of trichloracetic acid, wipe off the excess of acid with cotton, and touch the edges of the perforation, after drying the latter. Repeat this every four to eight days (Gomperz). One may also apply to the perforation, upon a cotton-tipped probe, a paper disc moistened in bichloride solution 1 : 1000, and repeat the application whenever the disc is displaced, that is, about every four days to two weeks.

Closure of the perforation is contraindicated when the membrana is defective in its entire extent, in perforation of Sharpnell's membrane, and in cachectic individuals. (Politzer.)

A small ball of sterile cotton, impregnated with boric or salicylic acid, or dipped in sterilized liquid vaseline, may be employed as an artificial drum membrane. It is best inserted by the patient himself, with Hassenstein's forceps, after showing him how. It should be worn only half an hour for the first four or five days, thereafter increasing the time by one-half hour every fourth or fifth day. It should be changed every day, and should be worn only when needed for purpose of conversation, its daily application not to exceed six or eight hours. If a discharge is present, the ear should be syringed before each fresh insertion and after each removal, and boric acid occasionally insufflated or a medicated lotion instilled. It should never be used in children.

If marked deafness or intense tinnitus and dizziness, not associated with labyrinthine disease (see tests under Examination of the Ear), develops subsequently to the cessation of suppuration (otitis media purulenta residua), employ the same treatment as that of chronic aural catarrh, *i.e.*, good hygiene; the correction of nasal and naso-pharyngeal obstructions; topical, mildly astringent applications to the tympanum; inflation of the tympanum, and the use of stimulating vapors; the use of bougies to restore the patency of the eustachian tube; the cauterization of granulations; the removal of crusts in the upper posterior quadrant with forceps, curette, or syringe; pneumo-massage by means of Delstanche's or the electro-motor masseur. Politzeration may first be tried, combined with pneumo-massage. Politzerize the ear two or three times a week for four or five weeks, then allow an intermission of two or three weeks, and resume, and so on.

If these measures are insufficient, an intra-tympanic operation should be resorted to. Such operations as tenotomy of the extensor tympani muscle; division of a tense posterior fold of the drum membrane (plicotomy), repeating several times, if necessary; division of interossicular and ossiculo-tympanic adhesions; the separation from the internal wall of the tympanum of an adherent drum membrane; the establishment of a permanent opening in the drum membrane when the latter alone is at fault (such an opening is very difficult to maintain); and the restoration of the tension of a relaxed drum membrane by applying a moistened, thin paper disc over the relaxed area are effectual only in rare cases.

Where other measures fail, and the labyrinth is not greatly involved (*i.e.*, no marked lowering of the upper tone limit is present: see Hearing Tests), Dench practices and advocates an exploratory tympanotomy, under local cocaine anæsthesia, carrying out hearing tests during the exploration. He turns down a large flap of the posterior-superior segment of the membrana vibrans. If the opening causes no great improvement in the hearing, he disarticulates the incudo-stapedial joint. If no improvement follows, he divides the stapedius tendon and any adhesions present in the oval niche, by means of stellate incisions, in order to free the stapes. He also divides adhesions in the round window by means of stellate incisions. If liberation of the stapes improves the hearing, he removes the membrana tympani, malleus, and incus to secure permanent improvement. If the stapes, as tested with a cotton-tipped probe, is fixed, Dench removes it by means of a sharp spoon or a small conical burr, "so guarded as to prevent its entering the labyrinth more than a millimetre, when the foot-plate is perforated"; or he leaves the stapes, and removes the malleus, incus, and drum membrane, and tries later several times to mobilize the stapes by the division of adhesions about the stapes and the round window. Should the drum membrane reform, it should be removed until it ceases to reform.

Operative measures should not be undertaken too soon after the suppurative process has ceased, for fear of provoking a relapse.

The treatment of facial paralysis due to suppurative otitis media is that of the primary affection.

Otitis Media Purulenta Residua.—L. *re-*, back + *si'dere*, to sit. See under Otitis Media Purulenta Chronica, above.

Otomycosis.—Gr. *οὖς* ear + *μύκης* fungus. Fungus invasion of the external auditory canal, causing itching, and possibly pain, tinnitus, and deafness. On inspection, the walls of the canal are seen to be studded with blackish spots, or a whitish or yellowish powdery-looking material, or thin, moist flakes or scales, according to the variety of fungus present.

Soak the deposit in liquor potassæ for fifteen minutes and examine microscopically.

The disease is quickly curable.

Treatment.—After syringing the ear with warm water or a 4 per cent. solution of sodium bicarbonate, and the use of the curette, forceps, and cotton pledgets, to remove the greater part of the growth, instruct the patient to fill the canal three times a day, for at least four days, and thereafter occasionally for several weeks, allowing the fluid to remain in at least fifteen minutes, with a warm solution of bichloride of mercury in 50 per cent. or pure alcohol, 1 : 3000; or a 2

per cent. solution of salicylic acid in alcohol; or a saturated alcoholic solution of boric acid; or sodium hyposulphite, 1 per cent. solution. The alcoholic solutions must be instilled drop by drop, because of the pain produced. Instead of fluids, one may insufflate very small amounts of finely divided boric acid and zinc oxide, equal parts; or boric acid and salicylic acid, 20 : 1. Oils favor the growth of the fungus.

Otorrhœa.—Gr. *οὖς* ear + *ῥεῖν* to flow. See Otitis Media Purulenta.

Otosclerosis.—Gr. *οὖς* ear + *σκληρός* hard. See Otitis Media Catarrhalis Chronica.

Paralysis of the Acoustic Nerve.—Gr. *παρά* beside + *λύειν* to loosen. See Acoustic Nerve Paralysis.

Facial Nerve.—L. *fácies*, face; Gr. *νεῦρον* nerve. See Otitis Media Purulenta Acuta; and Chronica; and Mastoiditis Interna.

Perforations of the Drum Membrane, Closure of.—See under Otitis Media Purulenta Chronica.

Perichondritis Auriculæ.—Gr. *περί* around + *χόνδρος* cartilage + *-ιτις* inflammation; L. *auricúla*, auricle or pinna. Open the bowels by means of castor-oil, or calomel followed by a saline (see Part 11). Cleanse the auricle with soap and warm water. If the symptoms are of less than twenty-four hours' duration, one may apply leeches, followed by the ice-bag or hot-water bag, with the object of aborting the inflammation; or hot compresses wet with bichloride solution, 1 : 1000, or boric acid solution, ℥iv ad Oi, or lead and opium lotion (see Part 11) may be applied, and covered with a hot-water bag or Leiter's coil.

As soon as fluctuation appears, make a free incision, scrape the cartilage thoroughly with a dull curette, irrigate with hot boric acid solution, and pack with iodoform or plain gauze. Repeat the irrigation and gauze packing daily.

Some have practiced the withdrawal of the septic fluid by means of a hypodermic needle, followed by the injection of a mixture of tincture of iodine, one part, with water, two parts, to be withdrawn after a few moments.

After healing has set in, employ gentle massage.

Pinna.—L. *pinna*, wing. See Auricle.

Plugs, Ceruminous or Epidermal.—L. *ceru'men*, ear-wax; Gr. *ἐπί* on + *δέρμα* skin. See Wax, Inspissated.

Politzerization.—See Inflating the Middle Ear.

Polypi, Aural.—See Aural Polypi.

Protruding Ears.—See Auricle, Congenital Malformations of the.

Purulent Inflammation of the Middle Ear.—See Otitis Media Purulenta Acuta; and Chronica.

Range of Hearing.—See under Examination of the Ear.

Ringing in the Ears.—See Tinnitus Aurium.

Rinné's Test.—See under Examination of the Ear.

Salpingitis.—Gr. *σάλπιγξ* tube + *-ιτις* inflammation. See Otitis Media Catarrhalis.

Schwabach's Test.—See under Examination of the Ear.

Sclerotic Type of Chronic Aural Catarrh.—Gr. *σκληρός* hard. See Otitis Media Catarrhalis Chronica.

Seborrhœa Auris.—L. *se'bum*, suet + Gr. *ῥοία* flow; L. *aur'is*, ear. Seborrhœa of the external meatus is associated with seborrhœa of the nose, forehead, and scalp. It causes itching, and may give rise to some tinnitus and deafness.

Possible etiological influences are general debility, anæmia, phthisis, severe constitutional diseases, especially the exanthemata, dyspepsia, and contagion.

Treatment.—Attend to any possible causal influence. After removing scales and other accumulations, as described under Wax, Inspissated, insufflate a minute quantity of finely powdered boric acid and zinc oxide, equal parts; or precipitated sulphur and talcum, 1 : 4 to 5; or apply an ointment of ammoniated mercury, gr. x–xxx to the ounce,

℞ Hydrargyri ammoniati..... gr. x–xxx
Adipis lanæ hydrosi .....
Petrolati mollis, āā ..... ℥ss

Sigmoid Sinus Phlebitis.—Gr. *σίγμα* letter s + *εἶδος* form; L. *sinus*, cavity; Gr. *φλέψ* vein + *-ιτις* inflammation. See Otitis Media Purulenta and Mastoiditis Interna.

Sinus Thrombosis.—Gr. *θρόμβος* plug. See Otitis Media Purulenta and Mastoiditis Interna.

Stenosis of the External Auditory Canal.—Gr. *στένωσις* narrowing. See Stricture of the External Auditory Canal, below.

Stricture of the External Auditory Canal.—L. *strictu'ra*, narrowing. **Etiology.**—Fibrous thickening or cicatricial rings or bands resulting from otitis externa, chronic suppurative otitis media, or chronic eczema, rarely syphilis, diphtheria, or the action of caustics; exostoses and hyperostoses (*q.v.*); senile atrophy and shriveling of the cartilage; congenital anomaly.

Temporary stricture is caused by acute otitis externa and by bulging of the posterior-superior wall of the deep meatus in mastoid suppuration.

For complete closure of the canal, see Atresia.

Examine with a probe, in order to ascertain whether the stricture is due to membrane or to bone.

A damming back of pus sometimes gives rise to alarming cerebral symptoms (see under Exostoses, for Politzer's method of syringing behind strictures).

Treatment.—First reduce any inflammation present by the measures described under Otitis Externa Diffusa. If the swelling is not thereby sufficiently reduced, dilate the canal by inserting plugs of absorbent cotton soaked in carbolic acid solution, 1 : 40, or boric acid solution, 4 per cent. Do not leave the plugs in too long.

The canal may be gradually dilated by inserting conical, resistant plugs of Charpie, of graduated sizes; or by means of hard rubber, silver, or soft rubber tubes, the latter containing a quill toothpick; or by sterilized, compressed sponge tents, which should be allowed to remain until moderate pain is produced by their swelling. Several parallel longitudinal incisions may be made before introducing the dilators. The canal should always be irrigated with warm boric acid solution, ʒi–iv ad Oi, before inserting dilators.

Electrolysis may be employed to reduce fibrous strictures. The needle is attached to the cathode, while the anode is connected with a large sponge, for application to the body surface. Employ a current of "25 to 50 milliampères, of five to twenty minutes duration, according to the amount and density of the fibrous tissue"; "five or six sittings are required."

The obstructing scar tissue may be excised, after detaching the auricle and posterior wall of the cartilaginous meatus, and replaced by a pedunculated skin flap from the mastoid region. (Jansen.)

The radical meato-mastoid operation is indicated where the stricture is complicated with a chronic middle ear suppuration.

Subjective Noises.—See Tinnitus Aurium.

Syphilis of the External Ear.—See Otitis Externa Syphilitica.

Tests for Hearing.—See under Examination of the Ear.

Thrombosis, Labyrinthine.—Gr. *θρόμβος* plug. See Labyrinthine Hemorrhage.

Sinus.—See Otitis Media Purulenta, and Mastoiditis Interna.

Tinnitus Aurium.—L. *tinnitus*, a tinkling; *aur'is* ear. **Causes.**—Ceruminous or epidermic plugs in the external meatus; seborrhœa auris; otomycosis; granulations and polypi; cholesteatoma; otitis externa; otitis media, acute or chronic, catarrhal or suppurative; closure of the eustachian tube in tubal congestion or catarrh or in acute or chronic catarrhal otitis media; labyrinthine affections (anæmia, in which the tinnitus is relieved by lying down, hyperæmia, hemorrhage, embolism occurring in septicæmia, and thrombosis occurring in purulent otitis media, both producing sudden tinnitus, labyrinthitis, concussion, Ménière's disease, vasomotor palsy of the labyrinthine vessels); acoustic nerve neuritis or paralysis; abnormal pulsation in the carotid artery, relieved by compressing the artery; intra-cranial aneurysm; loud or continuous sounds; hysteria; neurasthenia; arteriosclerosis; high blood pressure; anæmia; migraine; epilepsy (aura); gout; congestion of the turbinates, relieved by the application of cocaine or adrenalin; quinine, salicylates, etc.

A clicking tinnitus is described, due probably to "spasmodic contraction of one or more of the palate muscles, whereby the mouth of the eustachian tube is opened and shut, particularly if the mucous membrane is sticky from the presence of mucous" (Bacon); or possibly due, as some believe, to clonic spasm of the tensor tympani or stapedius muscle.

Politzer says: "Ringing in the ears without difficulty in hearing (see Hearing Tests,) must be regarded as a pure neurosis."

Treatment.—This depends, of course, upon the cause, (*q.v.*, in its appropriate alphabetical place). Inflation of the tympanum and rarefaction of the air in the external meatus are particularly effectual in middle ear diseases. Counter-irritation behind the ear in the form of alcoholic compresses or blisters (see Part 11) may afford relief. Quinine bisulphate may be applied to the parts exposed by vesication. The cartilaginous meatus may be painted with a mixture of tr. valerianæ, 2.0, ætheris acetici, 1.5, and glycerini puri, 30.0 (Politzer). Sodium bromide and dilute hydrobromic acid (see Drugs, Part 11) afford relief. Potassium iodide, gr. v, t.i.d., and inunctions of unguentum iodi into the skin of the mastoid process are recommended in otosclerosis and syphilis. "When the noises are of a pulsating character, with or without an affection of the heart," tincture of digitalis, six to ten drops, well diluted, t.i.d., or tincture of strophanthus, five drops, well diluted, t.i.d., may diminish them (Politzer). In functional nervous disorders, employ galvanism, using the anode as the active pole. Treat embolism and thrombosis of the labyrinthine vessels the same as labyrinthine hemorrhage (*q.v.*). For clicking tinnitus,

treat any existing naso-pharyngeal and tubal catarrh, and administer tonics, especially strychnine (*q.v.*). Galvanization of the soft palate, and massage of the region between the ramus of the inferior maxilla and the mastoid process may also be tried.

For persistent tinnitus as well as for persistent vertigo of labyrinthine (not central) origin, the auditory nerve has been divided with success. "According to W. S. Bryant, the most promising cases are those with marked loss in air conduction with preservation of bone conduction, cases of definite cochlear lesions in which the tinnitus is low-pitched and of varying character. High-pitched and musical tinnitus, with complete deafness in both air and bone conduction, he regards as contraindications." (Dench.)

Good hygiene, regulation of the diet and bowels, adequate rest and exercises, fresh air, regular hours of eating and sleeping, frequent bathing, residence in high altitudes, and the avoidance of noises, fatigue, alcohol and tobacco, are of importance.

Prognosis.—Where the cause is removable, the tinnitus is curable. The condition is rarely benefited in hyperplastic otitis media, otosclerosis, impermeability of the eustachian tube, labyrinthine and brain affections. The prognosis is particularly unfavorable when the tinnitus has lasted for months or years.

Trauma.—Gr. τραῦμα wound. See Injuries.

Tubal Catarrh.—L. *túba*, tube; Gr. καταῤῥεῖν to flow down. See Otitis Media Catarrhalis.

Congestion.—L. *con*, together + *gérere*, to heap. See Otitis Media Catarrhalis.

Tubo-Tympanic Catarrh.—See Otitis Media Catarrhalis.

Congestion.—See Otitis Media Catarrhalis.

Turning Test.—See under Examination of the Ear.

Tympanic Membrane.—See Membrana Tympani.

Tympanum.—L. *tym'panum*, drum. See Otitis Media.

Valsalva's Method of Inflating the Middle Ear.—See Inflating the Middle Ear.

Vertigo.—See Part 1, General Medicine and Surgery.

Voice Test.—See Examination of the Ear.

Watch Test.—See Examination of the Ear.

Wax, Inspissated.—L. *in*, in + *spissa're*, to thicken. The accumulation of wax in the ear may be due to (1) hypersecretion resulting from local hyperæmia occurring in eczema, seborrhœa, otitis externa, and catarrhal otitis media; or to (2) interference with the normal escape of cerumen from the ear resulting from stricture of the meatus, foreign bodies, hairs about the tragus, mixed cerumen and soap pushed back into the canal in attempts to dry it with the end of a towel, scaly conditions of the wall of the canal, eczema, and otitis externa.

Plugs of desquamated epidermis give rise to the same symptoms as ceruminous plugs.

Prognosis.—The hypersecretion of cerumen is often associated with middle ear catarrh or labyrinthine disease, therefore the prognosis for hearing is favorable only when the deafness is of sudden onset, indicating uncomplicated wax inspissation.

Recurrences after removal are to be expected.

Treatment.—If the plug is hard, first soften it by instilling a warm solution of sodium bicarbonate, gr. xxv, and glycerine, ℥i, in water, ℥i. After fifteen minutes, syringe with a warm solution of sodium bicarbonate, one teaspoonful to the pint, or bichloride of mercury, 1 : 8000 to 1 : 5000, directing the stream between the plug and the walls of the canal, and using very little force. Very adherent masses may be carefully loosened, under good illumination, with a round-ended probe or with forceps. If desired, the softening solution of sodium bicarbonate and glycerine may be instilled three or four times daily for about three days before employing the syringe.

Epithelial plugs should first be gently separated from the walls of the meatus with a flat applicator, and then the stream directed between the plug and the canal wall. The mass may, however, have to be removed piecemeal with a probe or forceps, an anæsthetic being required for children.

After removing the plug, dry the canal with a cotton-wound probe, and to guard against subsequent infection, insufflate a very small quantity of finely powdered boric acid and zinc oxide, equal parts; or have the patient instil a solution of boric acid, gr. xl, or salicylic acid, gr. x, in alcohol, ℥i, twice daily. A strong solution of silver nitrate, ℥i–iii ad ℥i, left in for fifteen or twenty minutes, and then syringed out with warm water, is highly recommended in cases of desquamative inflammation (epithelial plugs due to eczema, seborrhœa, otitis externa).

After clearing out and cleansing the canal, inflate the middle ear by Politzer's method (*q.v.*), and insert a loose plug of absorbent cotton in the meatus, to be removed the next day.

Weber's Test.—See Examination of the Ear.

Wounds.—See Injuries.

APPENDIX

Schema for the Aural History and Examination

No.

Name *Address* *Date*
Occupation *Age* *Race*
General appearance

Hygiene: Rest Exercise
Recreation Diet Sleep
Bowels Ventilation Baths
Sexual habits Tea and coffee
Narcotics Alcohol Tobacco
Other drugs

Complaint and history of present illness:
Previous history:
Family History:
Examination:
Hearing: Whisper— H. W.— Acoumeter— Lower tone limit
Upper tone limit— Weber— Rinné—
Schwabach:

	C	C′	C″	C‴	Civ	
A.C.						seconds
B.C.						seconds

A.C. louder, equal to, or less than B.C.:
Auricles Mastoids External meati
Drum membranes Eustachian tubes Nasopharynx
Pharynx Mouth Nose
Other Organs and Tissues:
Diagnosis:
Treatment (including dates and whether at office or home):

The Aural Armamentarium.—1. **Office and Operating Room Equipment.**—Two piano stools; adjustable gas bracket; head mirror and black leather head-band (Gleason's); light concentrator with reflector, the latter to replace the head mirror; Champion or Little Wonder pump for furnishing compressed air for atomizers; sink with foot-lever spigots; swinging water spittoon, galvanic battery and ionization outfit; galvanocautery and aural points; dental engine or electric motor for driving burrs; microscope; fountain syringe; hot-water bag; hypodermic syringe; revolving chair.

Dench's low-pitch tuning fork; spoons bent to a right angle at the ends; elastic tympanic catheter; Galton whistle; opaque glasses; Politzer acoumeter; Hassenstein's forceps; blunt ear-probe curved to a right angle at the end; foreign body forceps; polyp forceps; Politzer's ear forceps; mastoid curette; rongeur forceps of various sizes; hand gouge; Allport's middle-ear forceps; mastoid chisels and gouges; middle ear probe; aural ice-bag; aural Leiter coil; polypus snare; Toynbee's artificial drum-head; sharp aural polyp curette; Hartmann's ear forceps; dentist's tooth syringe; Lucæ's probe; metal ear-spout; Dench's modification of the Galton whistle; Bacon's scarificator; vibrophone; vibrometer; artificial leech; middle ear vaporizer; soft rubber bulb ear syringe; ear specula, full set: Gruber's and Boucheron's; Siegle's pneumatic speculum; Delstanche's rarefactor or masseur; electro-motor masseur; cotton carriers; blunt hook; Gross ear-scoop and hook; De Vilbiss atomizers, with set of tubes, some for introduction through the nose into the post-nasal space; Magic atomizers; nasopharyngeal syringes (piston and bulb) with post-nasal tips; Blake's middle ear syringe and cannula, straight and curved; eustachian catheters, several sizes; eustachian bougies; Clevenger's instrument for medicating the eustachian tube; aural auscultation tube; paracentesis needle; powder-blower; Allport's retractor; ear basins; trays; Politzer bag; Bezold-Edelmann set of tuning forks and whistles; McKay's ear forceps; Dench's cutting forceps; aural gauze packer; Allport's bone-crushing for-

ceps; circular trephines; metal rods for enlarging lumen of auditory canal in exostosis; Pravaz syringe; Siegle's otoscope; ether inhaler; ear-trumpets; ear telephone; the small London hearing horn with pocket battery; pronged retractors; mallet; dissecting forceps; probe director; Weber-Liel eustachian catheter; small camel's-hair brushes; needle-holder; needles, assorted; silk, silkworm-gut, catgut; scalpels; artery forceps.

Intratympanic instruments:—angled knives; Ludwig's incus hooks; dilatation knives; synechia knives; Sexton's forceps; blunt and sharp hooks; sharp curettes; sharp spoons, straight and angular; ring knives; sharp and probe-pointed knives, straight and curved; Dench's set of instruments; Dench's middle ear scissors; Hartmann's tenotome; ossiculectomy knives; ring curettes for removing the malleus; tympanic catheter; small tympanic mirror;

Periosteum elevators; straight scissors; Hartmann's middle-ear cannula; curved scissors; Jansen rongeur forceps; wet cup; Stacke's angular knives; blunt dissector; Hewitt's apparatus; Riverdin needle; burrs; Blake's cold wire-snare; Ballance's instruments for skin grafting: razor, pipettes, teasing needles, blunt packer, broad spatulæ.

Whiting's encephaloscope; Delstanche's nose-clamp for holding the eustachian catheter in place; absorbent cotton; flat aural applicator; gauze; iodoform gauze; glue; steel hairpin; Charpie's plugs of graduated sizes; aural tubes of silver or hard rubber for dilating strictures of external auditory canal; compressed sponge tents for the same; electrolytic needle; aluminum aural tubes; glass middle ear pipette; Roosa's or Lucæ's or Dayton's or Dench's middle ear vaporizer; No. 5 piano wire; thinnest catgut violin strings; Weaver masseur; artificial leech; Guttmann's drum-membrane trephine, made by E. B. Meyrowitz, New York.

Instrument case with drawers; cupboard; operating table; stands; basins; pitchers; hand-brushes; soap; Rochester sterilizer for dressings; instrument sterilizer (fish-kettle); operating gowns, caps, nose and mouth protectors; sheets; towels; rubber gloves; safety pins; adhesive plaster; tongue forceps.

2. Internal Drugs Mentioned in the Test.—(a) Alteratives and Tonics (L. *altero*, I change; *ton'us*, tone).—Iron; Fowler's solution; quinine; hypophosphites; codliver oil; tr. pulsatilla; sodium pyrophosphate; strychnine; galbanum; potassium iodide.

(b) Purgatives (L. *purga're*, to cleanse).—Calomel; castor-oil; Rochelle salt; sodium phosphate; sodium sulphate; pulv. scammony.

(c) Cardiovascular Drugs.—Tr. digitalis; tr. strophanthus; strychnine; nitroglycerine; amyl nitrite; ergot; adrenalin; atropine.

(d) Diaphoretics (Gr. *διά* through + *φορεῖν* to carry).—Pilocarpine; salol.

(e) Neuromuscular Sedatives (L. *sedo*, I allay).—Morphine; ether; chloroform; nitrous oxide gas; tr. opii; fl. ext. gelsemium; tr. aconite; codeine; phenacetin; asafœtida; tr. valerian; dilute hydrobromic acid; isopral; atropine; ext. and tr. hyoscyami; radix valerian; bromides; antipyrine.

3. Local Preparations Mentioned in the Text.—(a) Antiseptics and Astringents (Gr. *ἀντί* against + *σῆψις* putrefaction; L. *ad*, to + *strin'gere*, to bind).—Sodium bicarbonate; boric acid; mercury bichloride; alcohol; silver nitrate; iodoform; carbolic acid; liq. alum. acetatis; plumbum acet.; liq. plumbi subacetatis; sodium chloride; sodium hyposulphite; hydrogen peroxide; lime-water; ferric sulphate; bismuth subnitrate; dermatol; tr. iodi; lotio nigra; yellow oxide of mercury ung.; ammoniated-mercury; zinc sulphate; lead acetate; tr. benzoin; tannic acid; zinc olein; iodine; Dobell's solution; comp. tr. iodi; iodine ung.; lysol; formalin; potassium permanganate; Merck's perhydrol (pure 30 per cent. solution); hydrogen peroxide; Burow's solution; Thigenol; balsam of Peru; iodol; enzymol; ung. hydrarg. salicylic acid; ol. eucalyptus; camphor water; pine-needle oil; spt. vini rectificati.

(b) Caustics (Gr. *καίειν* to burn).—Silver nitrate stick and crystals; chromic acid; copper sulphate; zinc sulphate; alum; liq. ferri sesquichloridi; potassium hydroxide; liq. ferri chloridi; trichloracetic acid; carbolic acid crystals.

(c) Anodynes (Gr. *ἀν* without + *ὀδύνη* pain).—Cocaine crystals, alkaloid and salts; menthol crystals; alypin; eucaine; camphor; oil of cloves; ung. veratri; lead and opium lotion.

(d) Emollients and Protectives (L. *emol'lio*, I soften).—Glycerine; zinc oxide; olive-oil; petrolatum; albolene; oil of sweet almonds; liquid vaseline; lanolin; contractile collodion.

(e) Counter Irritants.—Mustard; oil of turpentine; tr. iodi; acetum cantharidis; cantharides plaster.

Miscellaneous.—Sodium acetate; sodium citrate; aq. destill.; diphtheria antitoxine.

PART 8

NOSE DISEASES

Abscess, Cuticular.—L. *absces'sus*, a going apart; L. *cu'tis*, skin. See Furunculosis Nasi.

Abscess of the Septum.—L. *sæp'tum*, septum. Abscess of the nasal septum is manifested by the presence of a painful, tender, bilateral, fluctuating, inflammatory swelling, and resulting nasal obstruction.

Etiology.—Hæmatoma of the septum; traumatism; extension of inflammation from an upper incisor tooth; infectious diseases.

Treatment.—Make a free, unilateral, horizontal incision, as low down as possible, remove any loose fragments of cartilage that may be present, and insert a loose gauze drain, which should be changed daily until healing occurs.

Accessory Sinus Disease.—L. *accessor'ius*, supplementary. See Sinusitis.

Adenoma Nasi.—Gr. *ἀδήν* gland + *ωμα*-tumor; L. *na'sus*, nose. See Tumors of the Nose.

Adhesions of the Septum.—L. *adhæ'sio*, from *adhæ'rere*, to stick to; *sæp'tum*, septum. Adhesions between the nasal septum and adjacent structures may occur as a result of traumatism, syphilis, lupus, diphtheria, measles, scarlet fever.

Treatment is indicated only in the presence of nasal obstruction.

Treatment.—Divide fibrous adhesions with scissors, bony synechiæ with the file-saw, and apply sterile vaseline freely, or insert a white celluloid plate cut in the shape of a Lake's splint. Any septal or turbinal deformity present should be corrected.

Cleanse the nose daily with a mild alkaline lotion:

℞ Sodii bicarbonatis,
Sodii biboratis,
Sodii chloridi,
Sacchari albi, aa..... gr. v
Aquæ..... ℥iii–iv

M. Sig.—Warm and spray into the nose several times a day. St. Clair Thomson.

Touch exuberant granulations with chromic acid solution, 20 per cent.

Alæ Nasi, Collapse of the.—See Alar Collapse.

Alar Collapse.—L. *al'a*, wing; *collapsus*, falling in. Collapse of the alæ nasi, with slit-like anterior nares, is due to non-use of the nose in breathing.

Treatment.—Correct the nasal obstruction (*q.v.*) Then enjoin nasal breathing, and employ local massage and faradism. A Felsbach or Francis dilator or a rubber tube may be worn at night, if required.

Alternating Stenosis.—Gr. *στένοσις* narrowing. See Rhinitis, Simple Chronic.

Anæmic Rhinitis—Gr *ἀν* neg. + *αἷμα* blood; Gr. *ῥίς* nose + *-ιτις* inflammation.

Synonyms.—Rhinitis Sicca; Chronic Rhinitis with Collapse of the Erectile Tissue.

A chronic, bilateral, anæmic condition of the nasal mucous membrane, due to general or constitutional anæmia, characterized by paleness and collapse of the mucous membrane, dryness and capaciousness of the nasal chambers, and the absence of crusts, ulceration, ozœna, and anosmia, whereby it is distinguished from atrophic rhinitis.

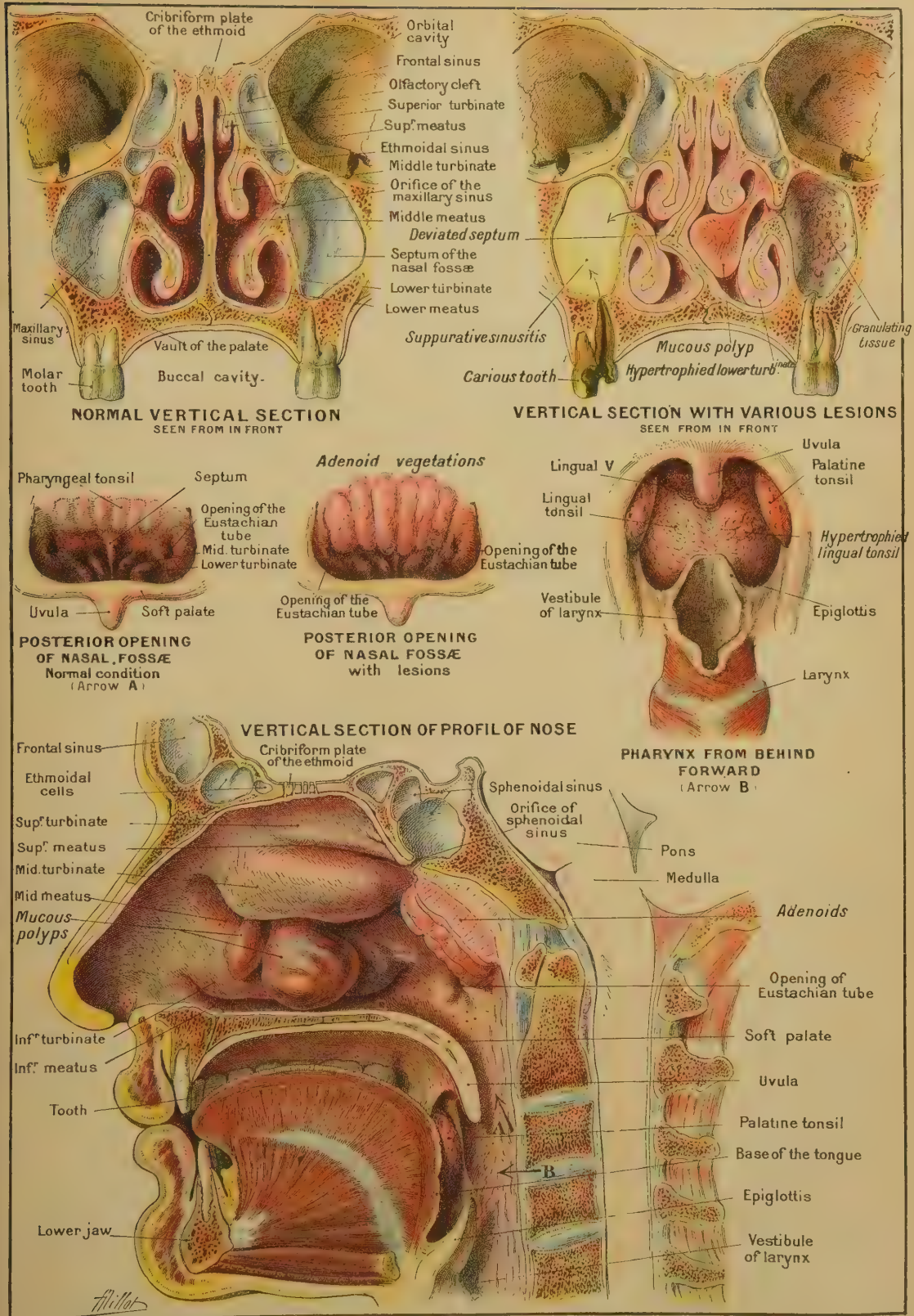
Treatment.—This is directed to the correction of the constitutional anæmia (*q.v.*, in Part 1, on General Medicine and Surgery).

Anæsthesia, Nasal.—Gr. *ἀν* not + *αἴσθησις* sensibility. See Nasal Neuroses.

Angioma Nasi.—Gr. *ἀγγεῖον* vessel + *-ωμα* tumor; L. *naśus*, nose. See Tumors of the Nose.

Anosmia.—Gr. *ἀν* neg. + *ὀσμή* smell. Loss of the sense of smell is nearly always bilateral. Test each nostril separately with oil of cloves, wintergreen, asafœtida, valerian, otto of roses, musk, oil of peppermint, alcohol, ether; avoid pungent substances like vinegar and ammonia, which act upon the fifth nerve.

Causes.—Destruction of the alæ nasi, whereby the inspired air passes along the floor of the nose, and does not reach the olfactory region; alar collapse; facial paralysis; rhinitis; nasal polypi; septal deviations; nasal tumors; nasal obstruction; nasal suppuration; adhesion of the soft palate to the pharynx; habit of sniffing up cold water, cocaine, snuff or nasal lotions, especially those containing carbolic acid and astringents; congenital absence of the olfactory bulbs and nerves; neuritis due to influenza, plumbism, tobacco, or malaria; dementia paralytica; tabes dorsalis; basal fracture of the skull; compression of the nerves by meningeal lesions, bone caries, or tumors; senile atrophy; increased intracranial pres-



LAROUSSE MÉDICAL

The nose and diseases of the nose

sure; disease of the uncinate gyrus; paralysis of the fifth nerve, causing anosmia on the affected side, due to interference with the secretion; reflex inhibitory influences due to an intranasal or other operation; hysteria; exhausting diseases (chiefly from St. Clair Thomson).

Treatment.—This depends upon the cause (*q.v.* in its appropriate place); but treatment is unsatisfactory.

Antrum Disease.—L.; Gr. *ἄντρον* cave. See Sinusitis.

Asthma.—Gr. *ἄσθμα* panting. See Asthma, in Part 1, on General Medicine and Surgery.

Atrophic Rhinitis.—Gr. *a* neg + *τροφή* nourishment; *ῥίς* nose + *-ιτις* inflammation.

Synonyms.—Ozœna; Coryza Fœtida; Sclerotic Rhinitis; Dry Catarrh.

A chronic affection, characterized by atrophy and sclerosis of the nasal mucous membrane and underlying bone, abnormal patency of the nasal passages, and a fetid, muco-purulent discharge which tends to dry into crusts.

The absence of ulceration or necrosis distinguishes it from syphilis and lupus. It should also be distinguished from foreign body, rhinolith, suppurative sinusitis, and suppurating adenoids.

Atrophic nasopharyngitis, atrophic laryngitis, dyspepsia, anæmia, etc., may result from or accompany the disease.

Treatment heretofore has been only palliative, but recent cures have been claimed by the use of vaccines.

Etiology.—The coccobacillus fœtidus ozenæ of Perez may be the causal agent. Possible etiological factors may be a local or adjacent chronic suppuration (ethmoidal or sphenoidal, rarely frontal or maxillary sinusitis, purulent rhinitis secondary to one of the exanthemata or to adenoids, membranous or diphtheritic rhinitis), long continued hypertrophic rhinitis, or constitutional disease, such as syphilis, tuberculosis, etc.

The affection occurs mostly in females. "Most cases begin between the ages of seven and twelve, and few originate after twenty-five." (Treitel).

Treatment.—Correct hygiene is of foremost importance This embraces adequate rest and exercise, regular hours of eating and sleeping, rest before and after meals, adequate clothing, fresh air day and night, a daily morning warm bath before breakfast in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regulation of the bowels, wholesome food, and the avoidance of dust, tobacco, and alcohol. Tonics may be indicated, *e.g.*, iron, arsenic, hypophosphites, codliver oil (see Drugs, Part 11). The seaside is recommended.

J. W. MacKenzie says: "As little liquid nourishment should be taken as is compatible with the comfort of the individual." Gleason prescribes potassium iodide, gr. ii–x, well diluted, t.i.d., (see Part 11), "to increase secretions and diminish reflex action," "if pharyngitis sicca and reflex laryngeal symptoms are very annoying." Each case should be treated according to indications. In post-diphtherial cases it is advised that antitoxin be given hypodermically and bichloride, 1 : 4000 to 2000, used locally. Any associated nasal or constitutional affection should, of course, receive attention.

As often as necessary for the prevention of crust formation, the patient should syringe the nose forcibly, by means of a fountain syringe, or a two-ounce hard rubber syringe, or a rubber bulb syringe, or a three or four ounce pear-shaped syringe, or a dental bulb syringe with post-nasal tip, with as hot a solution as can be borne of sodium chloride, bicarbonate, or biborate, one teaspoonful to the pint. The addition of thymol, 1 : 10,000, or resorcin, 1 : 200, renders it more pleasant (St. Clair Thomson).

Instruct the patient as follows: In irrigating the nose, hold the head horizontally over a basin, first on one side, then on the other, and insert the nozzle of the syringe each time in the upper nostril. To avoid the entrance of fluid into the eustachian tube and middle ear, keep the mouth wide open during the irrigation, breathe through the mouth, and refrain from swallowing. After each injection, clear the nose of crusts and pus by blowing.

Adherent crusts may be detached by a preliminary softening with peroxide of hydrogen or perhydrol, 3 per cent., or equal parts of Dobell's solution (Part 11) and peroxide of hydrogen, or by the wearing of Gottstein's cotton plugs in the nose (Fig. 104 ; the

Fig. 104.

plugs may be moistened with olive oil; they are changed every eight to twelve hours), or by packing the nose with cotton-wool saturated with a 10 per cent. aqueous solution of ichthyol or with coal oil, which is allowed to remain in place for about thirty minutes, when the crusts are detached by

blowing the nose, or by the use of a cotton-wound probe.

After each cleansing process, one of the following oily preparations should be thoroughly sprayed or brushed into all nooks and corners:

℞	Lignol,	
	Olei olivæ, aa	ʒi
		(Gleason.)
℞	Thymol	gr. i
	Menthol	gr. x
	Eucalyptol	♏i
	Paraffini liquidi	ʒi
		(Thomson.)
℞	Iodi puri	gr. vi
	Potassii iodidi	gr. xx
	Olei menthæ piperitæ	♏v
	Glycerini	ʒi

Antiseptic and stimulant paint. (Mandl.)

℞	Ichthyol	ʒi
	Coumarini	gr. ii
	Unguenti paraffini	ʒv

Antiseptic and sedative. (Thomson.)

The following solution may be carried about by the patient and used frequently during the day:

℞	Sodii bicarbonatis	gr. xx
	Acidi borici	ʒss
	Acidi carbolici	♏iv
	Glycerini	ʒi
	Aquæ, q.s. ad	ʒviii

M. Sig.—Dilute with an equal volume of water, and use in an atomizer as a nasal spray. (Dench.)

Massage by means of the electrical vibrator or by "titillating the parts with a probe armed with a pledget of cotton," and dipped in balsam of Peru, is recommended as a stimulative measure. A one per cent. solution of formaline occasionally sprayed or painted on under cocaine anæsthesia (4 per cent.) is also recommended for the same purpose (Thomson). Dench recommends, in some cases, the insufflation of a stimulating powder, viz., ℞ Pulveris sanguinariæ, ʒss, Pulveris lycopodii, q.s., ad ʒi. It causes pain and a profuse watery discharge. It should be discontinued after the tendency to crust formation has been checked. Summers recommends a 25 to 35 per cent. powder of citric acid with sugar of milk. In insufflating powders, have the patient first take a deep breath, and then exhale after the powder has been blown in.

Horn and Victors report remarkable results from the use of a polyvalent vaccine made from the Perez bacillus, which is obtained preferably from the anterior end of the middle turbinate after the removal of crusts. The organism is incubated in a bouillon tube for just twelve hours; then one drop of the bouillon culture is spread over from three to five agar Petri dishes, and these are incubated for twenty-four hours, when the isolated colonies are transferred to agar slants. The initial dose of 50,000,000 to 125,000,000 is increased by 100,000,000 every third or fourth or seventh day until a reaction is obtained, when the injections are given every five to ten days and the dose gradually increased to one to two billion. The virulence of the germ is sustained by animal passage and a fresh vaccine prepared every three or four weeks. While cures are reported, there is, however, a tendency to relapse after treatment is suspended.

Consult also Atrophic Nasopharyngitis, in Part 9, Throat Diseases.

Bad Odor, Abnormal Perception of a.—See Cacosmia.

Bleeding from the Nose.—See Epistaxis.

Bodies, Foreign, in the Nose.—See Foreign Bodies in the Nose.

Cacosmia.—Gr. *κακός* bad + *ὀσμή* smell. Perception of a bad odor.

Causes.—Local nasal disease; sinusitis, especially maxillary; foreign body; parosmia (*q.v.*)

Calculus, Nasal.—L. *cal'culus*, pebble; *naśus*, nose. See Foreign Bodies in the Nose.

Cancer of the Nose.—L. *cancer*; Gr. *καρκίνος* crab. See Tumors of the Nose.

Caseous Rhinitis; Nasal Cholesteatoma.—L. *caśeus*, cheese; Gr. *ῥίς* nose + *-ιτις* inflammation; L. *naśus*, nose; Gr. *κολή* bile + *στέαρ* fat + *-ωμα* tumor. A rare, unilateral accumulation of putrefying pus in the form of a fetid, cheesy mass, occurring as a result of sinusitis, polyposis, the presence of a foreign body, tumors, or nasal stenosis. As a result of pressure, bony ulceration and perforation may occur.

Treatment.—The cheesy mass is removed by means of a bent probe or curette and the post-nasal injection, or injection through the opposite nostril (see Nasal Technique), of a warm alkaline solvent, *e.g.*, sodium bicarbonate and biborate, aa gr. viii, ad aquam, ʒi.

Catarrhal Fever.—L. *catarr'hus*, from Gr. *καταῤῥεῖν* to flow down; L. *febris*, fever. See Rhinitis Acuta.

Catarrh, Dry.—See Atrophic Rhinitis.

Nasal, Acute.—See Rhinitis Acuta.

Chronic.—See Rhinitis, Simple Chronic; and Hypertrophic Rhinitis.

Dry.—See Atrophic Rhinitis.

Cerebrospinal Rhinorrhœa.—L. *cer'ebrum*, brain; *spiña*, spine; Gr. *ῥίς* nose + *ῥοία* flow. A rare affection, characterized by the escape of cerebrospinal fluid into the nose, due to injuries to the base of the skull, brain tumor, chronic hydrocephalus, syphilitic

pachymeningitis, or to no apparent cause. An embryonal cleft may connect the anterior horn of a lateral ventricle with the nose. The fluid is clear and watery, reduces Fehling's solution (see Urinalysis, in Part 1), and contains no mucin (mucin is precipitated by acetic acid). The discharge is constant (see Nasal Hydrorrhœa, for the points of distinction between the two affections).

There is no known treatment.

Cholesteatoma, Nasal.—See Caseous Rhinitis.

Cold in the Head.—See Rhinitis Acuta.

Collapse of the Alæ Nasi.—See Alar Collapse.

Erectile Tissue.—See Anæmic Rhinitis.

Concretions, Nasal.—L. *concrétio*, from *cum*, together + *creścere*, to grow. See Foreign Bodies in the Nose.

Coryza, Acute.—L.; Gr. κόρυζα. See Rhinitis Acuta.

Chronic.—See Rhinitis, Simple Chronic; and Hypertrophic Rhinitis.

Fœtida.—L. *fœ'tidus*. See Atrophic Rhinitis.

Cysts, Nasal.—Gr. κύστις bladder; L. *naśus*, nose. See Tumors of the Nose.

Deflection of the Septum.—See Deformities of the Septum.

Deformities of the Septum.—A septal deformity should be corrected only when it is productive of symptoms of nasal obstruction, viz., mouth-breathing, intermittent turgescence, hypertrophic rhinitis, sinusitis, post-nasal catarrh, chronic neuralgia and headache, sense of fulness, nasal timbre of the voice, perhaps epistaxis, perhaps asthma.

The treatment consists in a thorough submucous resection of the septum.

Deviations of the Septum.—L. *deviáre*, to turn aside. See Deformities of the Septum, above.

Diathermy.—See Part 1, General Medicine and Surgery.

Diphtheria, Nasal.—See Part 1.

Dry Catarrh.—See Atrophic Rhinitis.

Edema of the Septum.—See Œdema of the Septum.

Empyema.—Gr. ἐν within + πύον pus. See Sinusitis.

Enchondroma Nasi—Gr. ἐν in + χόνδρος cartilage; L. *naśus*, nose. See Tumors of the Nose.

Epipharyngeal Affections.—Gr. ἐπί on + φάρυγξ pharynx. See Throat Diseases, Part 9.

Epistaxis.—Gr. ἐπίσταξις nosebleed. The hemorrhage may occur from any part of the nasal mucosa, but arises almost invariably from the anterior portion of the septum, the so-called "site of predilection."

Etiology.—(a) Local Causes.—Deflection of the anterior portion of the septum, favoring drying, infection, and erosion of the mucous membrane (dry crusts form in the hollow of the septum, and give rise to bleeding when removed by the finger nail or by violent blowing of the nose); multiple telangiectases or varicosity of vessels in the anterior portion of the septum; traumatism; violent blowing of the nose, or sneezing; irritating inhalations; acute rhinitis; hay fever; chronic turgescent rhinitis; adenoids; tumors; syphilis; tuberculosis; polyposis; glanders; leprosy; separation of crusts in atrophic rhinitis; traumatic abrasion, ulceration, or perforation of the septum; foreign bodies, including maggots, worms, and leeches; fracture of the base of the skull.

(b) Constitutional Causes.—High arterial tension, as in arteriosclerosis, hepatic sclerosis, chronic interstitial nephritis, the climacteric, great or prolonged mental or physical exertion or excitement, extremes of heat and cold, sexual excess, overeating and general plethora, gout, alcoholism, hyperthyroidism, acromegaly; high venous pressure, as in valvular heart disease, congenital heart disease, emphysema, bronchitis, whooping-cough, pneumonia, compression of the veins from the head and neck by a thoracic aneurysm, mediastinal tumors, goitre and other tumors in the neck; blood dyscrasias, as in jaundice, the acute infectious diseases (typhoid fever, smallpox, whooping-cough, measles, scarlet fever, varicella, typhus fever, erysipelas, pneumonia, malaria, diphtheria, Rocky Mountain spotted fever, rheumatic fever, miliary fever, yellow fever, relapsing fever, ephemeral fever, influenza, acute nephritis, syphilis, etc.), in which epistaxis occurs usually at the onset, the various anæmias (pernicious anæmia, chlorosis, post-hemorrhagic anæmia, leukæmia, malaria, etc.), and the hemorrhagic diseases (hæmophilia, purpura, scurvy, etc.); rapid ascent to high altitudes; suppression of the menstrual flow; sudden suppression of a hemorroidal hemorrhage; vicarious menstruation; pregnancy; neurasthenia; certain drugs, viz., phosphorus, salicylates, chloralamide, quinine.

Treatment.—Have the patient sit erect, holding a finger bowl under the chin. Explore the nose carefully, under good illumination, using pledgets of cotton, either unmedicated or saturated with adrenalin solution, 1 : 2000 to 1 : 1000, or adrenalin and 10 per cent. cocaine, equal parts, or anti-

pyrine solution, 5 to 10 per cent., for the purpose of checking hemorrhage. If the bleeding point is found, apply to it silver nitrate, or pure carbolic acid, or trichloracetic acid, or chromic acid fused on the end of a probe (first warm the probe, dip it in the chromic acid crystals, then warm the part of the probe next beyond the crystals until the latter melt), or best, the galvanocautery heated to a cherry-red, or a silver probe at a dull red heat, simply singeing the mucous membrane lightly. Then apply sterile vaseline or boric ointment, and caution the patient against blowing the nose until the eschar has separated. The patient may be given an ointment to apply once or twice daily until the separation has occurred and the wound has healed.

Angiomata or telangiectases may be removed with the snare or forceps, and the base touched with chromic acid; or electrolysis, under cocaine anæsthesia (6 per cent.) may be employed; "the galvanocautery is apt to produce profuse hemorrhage." In employing electrolysis, the needle, coated with shellac or gutta percha up to within one-eighth inch of the point, is attached to the negative or positive pole of a galvanic battery (if to the positive pole it should be of gold or irido-platinum), and the other electrode, covered with a wet sponge, is applied to any convenient part of the body. A current of from one to five milliampères, depending upon the size of the growth, is used and allowed to act for one-half to two or three seconds, or until a blanched line is produced. The current should be increased and broken off slowly, so as to avoid dizziness, etc. Parallel, slanting punctures, ⅛ to ¼ inch apart, may be made, if required, down to the base of the growth (see also under Tumors of the Nose).

If the bleeding point can not be found, remove blood-clots, and spray the nose with adrenalin solution (1 : 1000 in adults, 1 : 10,000 in children); or insert pledgets of cotton saturated with adrenalin solution, and leave the latter in place for a few minutes, or, if need be, for twelve to twenty-four hours.

Other measures are as follows: (1) syringing (see Nasal Technique) with very hot or cold salt water (℥i ad Oi; temperature 112° to 130° F.), or alum, 4 per cent., or antipyrine, 8 to 10 per cent., or gelatine, 10 per cent., or hydrogen peroxide, 10 vols. strength or full strength, or perhydrol, 3 per cent., or dilute solution of hamamelis; (2) insufflation (see Nasal Technique) of powdered antipyrine, alum, or tannic acid; (3) compression of the septum by pinching the nose for about fifteen minutes; or the insertion and dilatation of the finger of a rubber glove with rubber tube and stopcock attachment (Osler); (4) affusions of cold water to the forehead, face, and nape of the neck; (5) digital compression of the facial artery; (6) the recumbent posture with the arms over the head, and clothing light and loose; (7) morphine, if required, as a calmative.

As a last resort, tampon the nasal cavity with Bernay's compressed sponge, or with ribbon gauze (one-half to one inch wide and one yard long), either dry or squeezed out of adrenalin solution, or hydrogen peroxide, or antipyrine solution, or dilute solution of hamamelis, or trichloracetic acid solution, 1 : 1000. Cocaine, 5 per cent., may first be applied. Employ a nasal speculum, nasal dressing forceps, and good illumination. Pack in the gauze in successive loops nearly to the posterior nares, from below upward and from behind forward, until the whole chamber is packed to the anterior nares. Gleason employs absorbent cotton, which is wrapped loosely about an Allen's probe "so that it forms a cone three inches in length and one inch in diameter at its proximal extremity" (see Fig. 105). The

Fig. 105.

cotton is saturated with peroxide of hydrogen and introduced along the floor of the nose to the epipharynx, and the probe is withdrawn while the cotton is held in place with the finger tip. Several more plugs are then inserted. If, after a minute or two, some blood oozes through the cotton, it is touched with perchloride of iron. After five or six hours the first plug is removed extremely slowly and gently, and after twelve to twenty-four hours the remaining plugs. No packing in the nose should be allowed to remain longer than forty-eight hours, for fear of sepsis and resulting meningitis. Ballenger insufflates subnitrate of bismuth before introducing the tampon.

In severe cases, and where packing of the anterior nares is insufficient, pack also the posterior nares by means of a Bellocq cannula, or a soft gum catheter, which is passed through the nostril into the pharynx, and then fastened to a cotton dossil by a thread, the free end of which is left long. The dossil is brought up into the choana by traction

on the catheter, and the nasal and mouth ends of the thread are tied over the upper lip. The anterior nares is then packed. All the packing should be removed within twenty-four to forty-eight hours, and the nose irrigated with a warm solution of sodium chloride, ℥i ad Oi.

In severe operative hemorrhage, Ballenger employs ice-water, "only two or three injections of four ounces each, for fear of shock."

St. Clair Thomson regards as antiquated the use of ergot (fluid extract, twenty drops in water every two hours), gallic acid (gr. x every two hours), and dilute sulphuric or citric acid (gtt. v–x, every hour for three doses), internally, and iron, alum, tannic acid, and other astringents externally. Calcium lactate, gr. xxx in a half tumbler of water, twice daily for six doses, is recommended (to a child of five years, "at least thirty or forty grains a day," says Holt). Nitroglycerin (see Part 11) may be given if the blood-pressure (*q.v.*, in Part 1), is high.

Any causal influence should, of course, receive attention (consult the appropriate caption and part).

Equinia.—See Skin Diseases, Part 5.

Ethmoiditis.—Gr. *ἠθμός* sieve + *εἶδος* form + *-ιτις* inflammation. See Sinusitis.

Exostosis Nasi.—Gr. *ἐξ* out + *ὀστέον* bone; L. *naśus*, nose. See Tumors of the Nose.

Fetid Coryza.—L. *fœ'tidus;* Gr. *κόρυζα.* See Atrophic Rhinitis.

Fibrinous or Membranous Rhinitis.—L. *fib'ra*, fibre; *membrána*, membrane; Gr. *ῥίς* nose + *-ιτις* inflammation. An inflammatory nasal affection of children, characterized by a membranous exudation, associated generally with the presence of the Klebs-Löffler bacillus, sometimes with the streptococcus, staphylococcus aureus, or pneumococcus, with slight nasal obstruction and catarrh, and little or no constitutional symptoms, and with spontaneous recovery in from one week to three months.

Bad hygiene is a factor. Measles, scarlet fever, and influenza may be causative. The affection may also follow intranasal operations, especially when the galvanocautery is used.

Treatment.—Keep the nose clean by means of the following bland, alkaline lotion, followed by a spray or instillation of liquid petrolatum,

℞ Sodii bicarbonatis,
Sodii biboratis,
Sodii chloridi,
Sacchari albi, aa ..... gr. v.
Aquæ ..... ℥iii–iv

M. Sig.—Warm, and spray into the nose (Thomson.)

St. Clair Thomson says: "It is useless to remove the membrane forcibly, and the local employment of strong antiseptics can only be harmful." "The injection of diphtheritic antitoxin does no good."

Kyle, however, advises the following measures: First douche the nose (see Nasal Technique) with a warm solution of sodium bicarbonate and biborate, aa gr. viii to the ounce; then apply, by means of spray, douche, or cotton pledget, equal parts of hydrogen peroxide (15 vols. strength) and cinnamon water. Remove all caseous material by means of a probe, loosely wrapped with cotton, repeat the alkaline douche, dry the surface carefully, and apply, on a cotton carrier, one of the following preparations:

℞ Toluol 36.0
Alcoholis absoluti 60.0
Liquoris ferri sesquichloridi ... 4.0

M. Sig.—Apply not oftener than three times daily. (Löffler's solution.)

℞ Olei eucalypti ..... gtt. ii
Acidi carbolici ..... gtt. i
Olei cassiæ ..... gtt. iv
Alboleni liquidi ..... ℥i

Open the bowels and prescribe elixir ferri, quininæ, et strychninæ phosphati (see Part 11).

Fibroma Nasi.—L. *fib'ra*, fibre + Gr. *-ωμα* tumor; L. *naśus*, nose. See Tumors of the Nose.

Foreign Bodies in the Nose.—These include calculi or concretions (rhinoliths), maggots, screw-worms, leeches, centipedes, ascarides, earwigs, etc.

A chronic, unilateral discharge, usually fetid, is very suggestive of the presence of a foreign body. Examine the nose with a probe, under good illumination.

Treatment.—Remove the foreign body by syringing through the opposite nostril (see Nasal Technique) or through the posterior nares with warm normal saline solution (℥i ad Oi), or by means of special forceps, or a strabismus or ear hook, or snare. If it can not be removed anteriorly, it may possibly be pushed back into the throat, where it should be caught before it can enter the larynx. Local cocaine anæsthesia (5 per cent.) may be required in adults, and general anæsthesia in children.

After removing the foreign body, cleanse the nose twice daily with a warm, bland, alkaline wash: ℞ Sodii bicarbonatis, Sodii biboratis, Sodii chloridi, Sacchari albi, aa gr. v, ad aquam ℥iii–iv (Thomson), followed by the application of ℞ Camphoræ, gr. i, Thymol, gr. i, Menthol, gr. ii, Cosmolini liquidi, ℥i (Kyle), until healing occurs.

Where the foreign body is animate, *e.g.*, larvæ, anæsthetize the patient with chloroform, and inject into the nose equal parts of chloroform and water, or a bland oil, such as olive oil or liquid vaseline. Then remove the dead larvæ and cleanse the nasal cavities as described before. Touch any ulcers present with zinc chloride, 3 per cent. solution; and for irritation, apply night and morning the following:

℞ Acetanilid ..... gr. v
Salol ..... gr. iv
Menthol ..... gr. v
Unguenti petrolati,
Unguenti zinci oxidi, aa ..... ℥iv
(Kyle.)

Should the larvæ get into the sinuses, operative interference may be demanded.

Fractures of the Nose.—See Part 10.

Frontal Sinusitis.—L. *frontális*, pertaining to the forehead. See Sinusitis.

Furunculosis of the Nose.—L. *furuńculus*, boil. **Etiology.**—Boils are caused by pus organisms, almost always the staphylococci aureus, albus, and citreus. Contributory causes are chronic eczema, irritating applications, scratching, dust, uncleanliness, sewer-gas, dampness, anæmia, chronic alcoholism, nephritis, diabetes mellitus, dyspepsia, gouty or rheumatic diathesis, menstrual disorders, poor health.

Treatment.—A boil may often be aborted by the application, on a pledget of cotton, of a 50 per cent. solution of ichthyol, or 10 per cent. solution of carbolic acid in glycerine. After pus has formed, incise the abscess from within the nose, whenever feasible.

Attend to any possible causal influence, and enjoin the observance of correct hygiene, *e.g.*, adequate rest and exercise, fresh air day and night, frequent bathing, regular hours of eating and sleeping, rest before and after meals, a generous dietary, regulation of the bowels, and tonics if indicated, viz., Blaud's pills, elixir ferri, quininæ, et strychninæ phosphatum, syrup of hypophosphites, Fowler's solution of arsenic (see Drugs, Part 11).

Fresh brewer's yeast, or the ordinary compressed yeast cake, or furunculin, or ceridin (see Part 11) is well recommended for furunculosis. "The use of vaccines is altogether the most effective treatment," says Holt. "Injections should be repeated every three or four days; beginning with fifty millions, the dose may be increased to one hundred millions." (See Vaccines in Part 11.)

Glanders; Equinia.—L. *équus*, horse. See Part 5, Skin Diseases.

Hæmatoma of the Septum.—Gr. αἷμα blood + -ωμα tumor; L. *sep'tum*, septum. Septal hæmatoma is characterized by the presence of a bilateral, rounded, smooth swelling, and resulting obstruction to breathing, following injury.

Treatment.—If small, leave alone; if large, or if suppurating, make a free, unilateral, horizontal incision as low down as possible.

Hallucinations of Smell.—L. *hallucinat'io*. See Parosmia.

Hay-Fever.—See Part 1, General Medicine and Surgery.

Hemorrhage, Nasal.—Gr. αἷμα blood + ῥηγνύναι to burst forth. See Epistaxis.

Hydrorrhœa, Nasal.—See Nasal Hydrorrhœa.

Hyperæsthesia, Nasal.—Gr. ὑπέρ over + αἴσθησις sensibility. See Nasal Neuroses.

Hyperosmia.—Gr. ὑπέρ over + ὀσμή smell. Exaggerated sense of smell.

Causes.—Hysteria; mania; hypochondria; irritative lesions of the olfactory bulbs and centre.

Hypertrophic Rhinitis.—Gr. ὑπέρ over + τροφή nutrition; ῥίς nose + -ιτις inflammation. A chronic, hypertrophic affection of the inferior turbinal, and perhaps the anterior extremity of the middle turbinal, giving rise to partial nasal obstruction and an abundant, thick, nasal or postnasal discharge, and caused by the same conditions that produce chronic turgescent rhinitis (*q.v.*). Gleason says: "It is invariably the result of long-continued simple chronic (intumescent) rhinitis." The surface of the turbinal appears nodular, or polypoid, or rugose, and is firm to the touch of the probe. Cocaine and adrenalin do not contract the tissues as in chronic turgescent rhinitis.

The Prognosis under treatment is favorable. The possible sequelæ are the same as those of simple chronic rhinitis (*q.v.*). Atrophy may also result.

Treatment.—Attend to any existing constitutional derangement, and enjoin the observance of correct hygiene (see the etiology and prophylaxis of Simple Chronic Rhinitis).

Prescribe, for cleansing purposes at home, one of the following, to be used as often as required, until all inflammation has subsided:

℞ Sodii bicarbonatis,
Sodii biboratis,
Sodii chloridi,
Sacchari albi, aa ..... gr. v
Aquæ ..... ℥iii–iv

M. Sig.—Use warm as a spray or douche (see Nasal Technique). (Thomson.)

℞ Sodii bicarbonatis..... gr. xxx
Sodii biboratis..... gr. xvl
Acidi carbolici..... ♏vi
Glycerini..... ʒi
Aquæ destillatæ..... ʒvi
M. Sig.—Use warm as a spray.

Follow each cleansing process by a spray of liquid albolene or vaselin, benzoinol, or paroline.

After the inflammation has disappeared, resort to surgery for the removal of hypertrophied masses and obstructive lesions, such as spurs, septal deflections, adenoids, and enlarged tonsils. Hypertrophied masses are removed (under local cocainization, 6 per cent., and adrenalization, 1 : 1000, or under general anæsthesia) with the cold-wire snare (Jarvis' needles and snare; the Krause, Blake, or Lock snare, threaded with No. 5 piano wire), saw, spoke-shave, or swivel knife. When employing the snare to remove the enlarged anterior end of the inferior or middle turbinate, first make a cut with scissors at the attachment of the turbinal to the outer nasal wall. Tighten the screw slowly and intermittently so as to avoid hemorrhage. After removing the mass, insufflate iodol upon the cut surface, or cauterize the cut surface with the galvanocautery or with chromic acid fused on the end of a probe (first warm the probe, dip it in the chromic acid crystals, then warm the part of the probe next beyond the crystals until the latter melt). Warn the patient not to clear the nostril for forty-eight hours. At the end of this period, the nose is cleared of clots and mucus by blowing, and an alkaline lotion followed by an oily spray is prescribed until healing occurs.

The punch forceps are useful for the purpose of removing the enlarged anterior end of the middle turbinal and the posterior end of the inferior turbinal (under general anæsthesia).

When the whole inferior border of the turbinal is hypertrophied and presses firmly upon the septum, it is best to give a general anæsthetic, and after adrenalizing the parts thoroughly, to remove the hypertrophied part in one mass, with sharp, narrow, curved nasal scissors, or saws, or spoke-shave, or swivel knife. Then apply cotton saturated with adrenalin for five or ten minutes; then paint the cut surface with collodion.

In employing the snare or punch forceps for the removal of the posterior end of the inferior turbinal, the left forefinger is used in the post-nasal space as a guide.

St. Clair Thomson first grasps the mass firmly with the snare, then waits "some minutes to allow of blood-clotting," then, with a quick movement, avulses the mass instead of cutting through it, thus removing it more thoroughly and with less hemorrhage.

Hemorrhage is checked by the same measures detailed under Epistaxis, viz., closure of the nostrils with thumb and forefinger; ice externally and in the mouth; the horizontal posture; syringing of the nose with very cold or very warm normal salt solution, ʒi ad Oi; the introduction of pledgets of cotton soaked in hydrogen peroxide, 10 vols. strength; packing with ribbon gauze or cotton as a last resort.

Fig. 106.

The operator should aim to leave at least one-half of the turbinal body behind so as to avoid the development of a dry rhinitis, pharyngitis, and laryngitis.

For diffuse turgidity and hypertrophy, gradual pressure with soft rubber splints or malleable silver tube (Fig. 106) is well recommended. The silver tube is worn only one or two hours at a time at first, and the pressure and the duration of its application are gradually increased.

Injuries of the Nose.—See Fractures of the Nose, in Part 10.

Intumescent Rhinitis, Chronic.—L. *intumescens*, swollen. See Rhinitis, Simple Chronic.

Ionic Medication.—See Part 1, General Medicine and Surgery.

Lipoma Nasi.—Gr. λίπος fat + -ωμα tumor; L. *naśus*, nose. See Tumors of the Nose.

Loss of Smell.—See Anosmia.

Lupus of the Nose and Throat.—See Part 9, Throat Diseases.

Lymphoma Nasi.—L. *lym'pha*, lymph + Gr. -ωμα tumor; L. *naśus*, nose. See Tumors of the Nose.

Maxillary Sinusitis.—L. *maxil'la*, jawbone. See Sinusitis.

Membranous Rhinitis.—See Fibrinous or Membranous Rhinitis.

Mucocele of the Accessory Sinuses.—L. *mućus* + Gr. κήλη tumor. See under Sinusitis.

Nasal Abscess.—L. *naśus*, nose; *absceśsus*, a going apart. See Furunculosis Nasi.

Adenoma.—Gr. ἀδήν gland + -ωμα tumor. See Tumors of the Nose.

Alæ, Collapse of the.—See Alar Collapse.

Anæsthesia.—Gr. ἀν not + αἴσθησις sensation. See Nasal Neuroses.

Calculus.—L. *calćulus*, pebble. See Foreign Bodies in the Nose.

Catarrh, Acute.—L. *catar'rhus*, from Gr. καταῤῥεῖν to flow down; L. *acui'us*, sharp. See Rhinitis Acuta.

Chronic.—See Rhinitis, Simple Chronic; and Hypertrophic Rhinitis.

Cholesteatoma.—See Caseous Rhinitis.

Collapse.—See Alar Collapse.

Concretions.—L. *concrétio*, from *cum* together + *creścere*, to grow. See Foreign Bodies in the Nose.

Cysts.—Gr. κύστις bladder. See Tumors of the Nose.

Edema, Acute.—See Œdema of the Septum.

Enchondroma.—Gr. ἐν within + χόνδρος cartilage + -ωμα tumor. See Tumors of the Nose.

Exostosis.—Gr. ἐξ out + ὀστέον bone. See Tumors of the Nose.

Fibromatosis.—L. *fib'ra*, fibre + Gr. -ωμα tumor. See Tumors of the Nose.

Foreign Bodies.—See Foreign Bodies in the Nose.

Fractures.—See Part 10.

Furunculosis.—See Furunculosis of the Nose.

Hemorrhage.—Gr. αἷμα blood + ῥηγνύναι to burst forth. See Epistaxis.

Nasal Hydrorrhœa.—L. *naśus*, nose; Gr. ὕδωρ water + ῥοία flow. A rare and obscure nasal affection, characterized by a more or less abundant, viscid, slightly opalescent, mucinous discharge, varying from a few ounces to a pint or more in the twenty-four hours, and without marked visible local changes, *e.g.*, hypertrophies, polypi, septal spurs, neoplasms, sinusitis, etc., and not associated with trigeminal neuritis.

It is distinguished from cerebrospinal rhinorrhœa (*q.v.*,) by the presence in the secretion of mucin, which is precipitated by acetic acid, and the absence of a reducing substance, as demonstrated by Fehling's test (see Urinalysis in Part 1). The secretion usually flows from both nostrils; whereas cerebro-spinal rhinorrhœa is unilateral. Malaise begins with the discharge and only ends with the cessation of the discharge; whereas in cerebrospinal rhinorrhœa, headache, etc., are relieved by the discharge. Nasal hydrorrhœa is frequently ushered in with sneezing, photophobia, and lachrymation, whereas no photophobia or lachrymation accompanies cerebrospinal rhinorrhœa. The discharge in the former affection rarely continues during sleep, in the latter it does.

Treatment.—The treatment is the same as that of hay-fever (*q.v.*): cauterization of sensitive areas; correction of nasal and sinus lesions; adrenalin sprays, 1 : 20,000 to 1:1000, repeated as required; atropine, gr. $\frac{1}{200}$, every three or four hours, to lessen secretion; zinc chloride solution, 3 per cent., twice daily, to lessen secretion (Kyle); acidi gallici, gr. x, ad. vaseline ʒi, with menthol, gr. i–ii (Gleason); olei myrti, gtt. v, olei santali, gtt. v, alboleni liquidi, ʒi, or, camphoræ, gr. i, mentholis gr. iv, benzoinolis, ʒi, to lessen local irritation (Kyle); the constant current (Babes); calcium chloride, gr. xxx–xlv a day, (see Part 11), for two weeks. (Lake.)

Nasal Hyperæsthesia.—Gr. ὑπέρ over + αἴσθησις sensibility. See Nasal Neuroses.

Injuries.—See Fractures of the Nose in Part 10.

Lipoma.—Gr. λίπος fat + -ωμα tumor. See Tumors of the Nose.

Lupus.—See Lupus of the Nose and Throat, in Part 9.

Lymphoma.—L. *lym'pha*, lymph + Gr. -ωμα tumor. See Tumors of the Nose.

Neoplasms.—Gr. νέος new + πλάσμα formation. See Tumors of the Nose.

Nasal Neuroses.—Gr. νεῦρον nerve. Nasal neuroses embrace anosmia, hyperosmia,

parosmia, cacosmia, anæsthesia (caused by hysteria, chronic nasal disease, or rarely intracranial growths or syphilitic pachymeningitis), hyperæsthesia, and possibly hay-fever and asthma.

Nasal Obstruction.—

Nasal Œdema, Acute.—See Œdema of the Septum.

Nasal Osteoma.—Gr. *ὀστέον* bone + *-ωμα* tumor. See Tumors of the Nose.

Papilloma.—L. *papil'la*, nipple + Gr. *-ωμα* tumor. See Tumors of the Nose.

Nasal Polypus.—L. *naśus*, nose; Gr. *πολύς* many + *πούς* foot. Nasal polypi consist of exuberant granulation tissue, and arise as a result of chronic inflammation, *e.g.*, sinusitis (especially necrosing or rarefying ethmoiditis), simple chronic rhinitis, hypertrophic rhinitis, septal spurs and deviations, foreign bodies, traumatism, new-growths, nasal hydrorrhœa, cerebrospinal rhinorrhœa, etc. The symptoms are those of nasal obstruction together with a discharge. The affection is common.

Nasal polypi arise almost invariably from the inferior surface of the middle turbinate, or from the ethmoidal cells; very rarely from the septum, the inferior turbinate, or the accessory sinuses (mostly the maxillary).

In the examination, always employ cocaine (4 per cent.) and the probe. Polypi do not bleed readily like malignant growths.

Prognosis.—The prognosis is good if all the polypi are removed together with their cause.

Treatment.—St. Clair Thomson says: "In operating on nasal polypus, two facts should be kept in mind. The first is that, with few exceptions, nasal polypi spring from the middle turbinal and the neighborhood of the middle meatus; the second is that, when numerous, rapidly recurrent, or associated with suppuration, they will be found to be dependent on pus in one or more of the accessory sinuses."

In simple cases, in which the cause is a slight local inflammation, the use of the cold wire snare is effectual. First cleanse the nose by irrigation (see Nasal Technic) with warm, boiled, normal saline solution (℥i ad Oi); then apply to the accessible mucous membrane, particularly that of the septum, sterile cotton pledgets saturated with 4 to 10 per cent. cocaine and 1 : 2000 adrenalin solution. After waiting seven minutes, pass the wire loop over the polypus to its base, tighten the loop until the pedicle is snugly grasped, then tear the polypus from its attachment by a "quick movement of avulsion." As many polypi should be removed at one sitting as practicable. The toothed forceps may be useful in bringing down the polypus into a more accessible position; or this may be accomplished by the patient blowing through the nose. Kyle prefers a modified Sajous snare, or scissors, or alligator-jaw, biting forceps. St. Clair Thomson prefers a simple Krause or Blake snare, threaded with No. 5 piano wire.

The left forefinger in the post-nasal space is of assistance when the polypus presents in this region.

If the bleeding is severe, apply an 8 to 10 per cent. solution of alumnol, or pack the nose lightly with gauze or cotton pledgets moistened with hydrogen peroxide (see Epistaxis); but remove the packing as soon as possible, within, at the most, twelve hours.

After twenty-four or forty-eight hours, the nose should be cleansed two, three, or four times a day with, say,

	℞	Sodii biboratis	gr. xv
		Acidi carbolici	gr. ii
		Aquæ cinnamomi	℥ii
		Aquæ, q.s. ad	℥i

(Kyle.)

or	℞	Sodii bicarbonatis,	
		Sodii biboratis,	
		Sodii chloridi,	
		Sacchari albi, aa	gr. v
		Aquæ	℥iii–iv

(Thomson.)

Where the ethmoid bone or an accessory sinus is diseased, more extensive operative measures are required (see the standard special textbooks).

"In the aged or the infirm, however, it is usually inadvisable to recommend measures more radical than the simple removal of the polypi, as the danger from shock and acute infection is greater in these subjects" (Ballenger). Ballenger says that the injection into the polypus with a hypodermic syringe of a few minims of a saturated solution of zinc sulphate or tannic acid will cause it to shrink and slough away.

Nasal Septum.—See Septum.

Suppuration.—L. *sub*, under + *pus*, *pur'is*, pus. See Purulent Rhinitis.

Technique.—In irrigating the nose, hold the head horizontally over a basin, first on one side, then on the other, and insert the nozzle each time in the upper nostril. To avoid the entrance of fluid into the eustachian tube and middle ear, keep the mouth wide open during the irrigation, breathe through the mouth, and refrain from swallowing.

In insufflating powders, have the patient first take a deep breath and exhale after the powder has been blown in.

In fusing chromic acid on the end of a probe, first warm the probe, dip it in the chromic acid crystals, and warm the part of the probe next beyond the crystals until the latter melt.

In using the **electrocautery**, first cocainize and then dry the parts carefully. Then turn on the current until the cautery point is at a cherry-red heat. A white heat causes hemorrhage, while a dull heat causes adherence of the point to the charred tissues. Remove the cautery before turning off the current.

Nasal Traumatism.—Gr. *τραῦμα* wound. See fractures of the Nose, in Part 11.

Tuberculosis.—See Lupus of the Nose and Throat in Part 9.

Tumors.—See Tumors of the Nose.

Nasal Ulcers.—L. *naśus*, nose; *ulcus*, ulcer. **Causes.**—Nasal catarrh; herpes; eczema; foreign bodies; paresis or paralysis of the fifth nerve (neuroparalytic or trophic ulcer); scurvy; diabetes; varicose veins; excess of sulpho-cyanides and ammonium salts in the salivary and nasal secretions (Kyle); malignant neoplasms; tuberculosis; syphilis; leprosy; glanders; membranous rhinitis, croupous or diphtheritic; acute infectious diseases (measles, scarlet fever, typhoid fever, typhus fever, smallpox, rheumatism, influenza, diphtheria); irritating fumes (chromic acid, copper-arsenic green); traumatism (picking at the nose); the galvano-cautery or other caustic; septal hæmatoma; septal abscess; deposition of dust or discharge over the bleeding area of the septum in those subject to epistaxis (see Ulceration and Perforation of the Septum).

Treatment.—Attend to the cause. Cleanse the nose and soften scabs by means of a warm, alkaline lotion, viz., ℞ Sodii bicarbonatis, sodii biboratis, sodii chloridi, et sacchari albi, aa gr. v, in aquam, ℥iii–iv; or ℞ Hydrogeni peroxidi et aquæ cinnamomi, aa; applied frequently during the day. Then gently remove scabs and apply a mild mercurial ointment, *e.g.*, ℞ Hydrargyri ammoniati, gr. x, petrolati mollis, ℥i; or the following, ℞ Tr. benzoini comp. et boroglyceridi (50 per cent.), aa.

If the ulcer is very sluggish, it may be very gently curetted, and a weak caustic applied only occasionally, *e.g.*, silver nitrate, gr. v–xx ad ℥i; or chromic acid, gr. v–x ad ℥i; or formaline, 3 per cent.; or zinc chloride, 3 per cent.; or Löffler's solution (toluol, 36 parts, absolute alcohol, 60 parts, liquor ferri sesquichloridi, 4 parts).

Kyle recommends the local application of bovinine to trophic ulcers. The ulcers of leprosy are treated with chaulmugra oil, one part to five or six parts of lard; those of glanders with carbolic acid, 1 : 60, on lint. Tubercular ulcers should be thoroughly removed with the knife or cautery, followed by the application of lactic acid, 50 per cent. solution, and insufflations (see Nasal Technic), of pyoktanin or aristol (Kyle). Syphilitic ulcers should be touched every other day with acid nitrate of mercury, one part to four parts of water; or if this is too painful, silver nitrate, gr. lx ad ℥i. (Gleason.)

Zinc ionization (*q.v.*) is recommended—a current of eight milliampères being applied for fifteen minutes, and repeated in one week.

Naso-Pharynx.—See Throat Diseases, Part 9.

Neoplasms of the Nose.—Gr. *νέος* new + *πλάσμα* formation; L. *naśus*, nose. See Tumors of the Nose.

Neuroses, Nasal.—See Nasal Neuroses.

Nose, Affections of the.—See Nasal Affections.

Nose-Bleed.—See Epistaxis.

Obstruction, Nasal.—L. *obstructio*; *naśus*, nose. See Nasal Obstruction.

Odor, Bad, Abnormal Perception of a.—See Cacosmia.

Œdema of the Septum; Acute Œdematous Rhinitis.—Gr. *οἴδημα* swelling; L. *sæp'tum*; *acútus*, sharp; Gr. *ῥίς* nose + *-ιτις* inflammation. **Causes.**—Traumatism; the galvanocautery and other escharotics; irritating fumes; inhalation of steam; dental caries; perichondritis; typhoid and other infectious fevers.

Treatment.—Apply astringents, *e.g.*, adrenalin, 1 : 1000, or a 0.1 per cent. solution of formaldehyde in 5 per cent. cocaine solution, or 6 per cent. sulpho-carbolate of zinc, or 3 per cent. chloride of zinc. If the swelling is excessive, puncture the œdematous tissues.

Œdematous Rhinitis, Acute.—See Œdema of the Septum, above.

Osteoma, Nasi.—Gr. *ὀστέον* bone + *-ωμα* tumor; L. *naśus*, nose. See Tumors of the Nose

Ozœna.—Gr. *ὄζη* stench. See Atrophic Rhinitis.

Papilloma Nasi.—L. *papil'la*, nipple + Gr. *-ωμα* tumor; L. *naśus*, nose. See Tumors of the Nose.

Parosmia.—Gr. *παρά* beside + *ὀσμή* smell.

Subjective perversion of the sense of smell, or olfactory hallucinosis.

Causes.—Hysteria; epilepsy; insanity; hypochondriasis; injury of the head; rarely tumors in the hippocampi; influenza.

Perforation of the Septum.—See Ulceration and Perforation of the Septum.

Perversion of the Sense of Smell.—L. *per* through + *ver'sio*, a turning. See Parosmia.

Polypus, Nasal.—See Nasal Polypus.

Post-Nasal Affections.—See Throat Diseases.

Purulent Rhinitis.—L. *pus, pur'is*, pus; Gr. *ῥίς* nose + *-ιτις* inflammation. **Causes.**—Acute coryza in the later stages; the specific exanthematous fevers; syphilis; tuberculosis; gonorrhœa; mixed nasal infections; foreign bodies; suppurative sinusitis.

Treatment.—Attend to the cause. In simple purulent rhinitis, first blow out the mucus and pus from each nostril (in children using the rubber bulb ear syringe), then cleanse the nose very gently, twice daily, by means of the rubber bulb syringe (see Nasal Technic) with Dobell's solution (see Part 11), or hydrogen peroxide, 15 vols. strength, or equal parts of hydrogen peroxide and cinnamon water, or, in infants, tepid milk containing three grains of sodium chloride to the ounce, followed by tepid boric acid solution of the same strength. Then dry, and apply with a brush a small quantity of an astringent preparation, viz., zinc sulphocarbolate gr. xx, to water one ounce; or ichthyol, 50 per cent. solution; or camphor, gr. i, menthol, gr. iii, and carbolic acid, gtt. ii, in liquid albolene one ounce; or in infants, two or three drops of liquid petrolatum.

Rhinal Hydrorrhœa.—Gr. *ῥίς* nose. See Nasal Hydrorrhœa.

Rhinitis, Acute.—Gr. *ῥίς* nose + *-ιτις* inflammation; L. *acut'us*, sharp. **Synonyms.**—Acute coryza; acute nasal catarrh; cold in the head; acute catarrhal fever.

An acute inflammatory affection of the nasal mucous membrane, lasting from four to fourteen days or longer, characterized by the occurrence of malaise, lassitude, slight fever, chilly sensations, perhaps headache, perhaps slight sore throat, sneezing, lachrymation, dryness and stuffiness of the nose (first stage or stage of onset), followed by a profuse, watery, acrid discharge (second stage), which later becomes mucopurulent or purulent (third stage).

The inflammation may extend to any part of the respiratory tract, and also to the accessory sinuses, eustachian tube, middle ear, and retropharyngeal glands.

Etiology.—A variety of microörganisms may be demonstrated, *e.g.*, the staphylococcus aureus, streptococci, pneumococci, bacillus influenzæ, micrococcus catarrhalis, and bacillus rhinitis of Tunnicliff; but the last named is probably the common cause. Contributory influences are sudden temperature changes; automobiling, or exposure to cold, or wet, or draughts; damp feet; insufficient or too much clothing; overheated rooms; vitiated air, dust and irritating inhalations; spring and fall; depressing mental and physical states, *e.g.*, fatigue, hunger, etc.; constipation; hepatic torpidity; defective urinary excretion; gout; rheumatism; diabetes; infantile scurvy; anæmia; digestive disturbances; sexual excesses; violent exercise; alcohol, tobacco, iodide, arsenic, etc.; hay fever; asthma; traumatism; nasal obstruction, due to adenoids, septal deviations, polypi, etc.; foreign bodies; chronic rhinitis; infectious diseases ("cold" or catarrhal fever, influenza, measles, scarlet fever, whooping-cough, typhoid fever, typhus fever, rheumatic fever, syphilis, tuberculosis, smallpox, chicken pox, diphtheria, erysipelas, glanders, gonorrhœa).

Treatment.—1. First or Dry Stage.—Enjoin rest indoors, preferably in bed, in a comfortable, well-ventilated room, free from draughts, for one or two or three days. Open the bowels with castor-oil, or calomel in divided doses, followed by a saline. For drug formulæ, etc., see Part 11. Prescribe liquid diet and copious hot drinks, *e.g.*, lemonade, barley water, linseed tea, or whiskey and water, and a hot mustard foot-bath (about one tablespoonful to the gallon), or a full hot bath, if it can be taken without danger of subsequent exposure. Tincture of aconite is well recommended, one drop in water every fifteen minutes for several hours, or until dryness of the throat or tingling of the fingers is produced. At bedtime, one may administer Dover's powder, gr. v–x, or bromide of quinine, gr. v, or fluid extract of pilocarpine, ♏x–xlv, according to age.

Kyle recommends the insertion into each nostril of a tablet containing sodium chloride, gr. 1/8, for the purpose of inducing a copious flow of mucus and serous exudate, to be followed, every two hours, by the instillation of a few drops of the following protective: ℞ Olei cassiæ, Olei santali, aa gtt. vi, Alboleni liquidi, ʒi; or the application on a cotton-wound probe of a slight astringent: ℞ Tr. benzoini comp. et boroglycerini (50 per cent.), aa.

Parker recommends cinnamon for abortive purposes: "ol. cinnamomi, 20 minims, in milk every hour for three doses, then

15 minims every other hour for two doses, and then 10 minims every three or four hours." "This may effect a cure in thirty-six to forty-eight hours." (Allen; Thomson.)

Spiess recommends the free insufflation of orthoform into the postnasal space, to abort an acute catarrh.

The following combination is much used:

℞ Pulveris camphoræ..... gr. ss
Extracti belladonnæ..... gr. ⅛
Quininæ bromidi..... gr. i
M. et fiat capsula No. 1; mitte talis 8.

Sig.—One capsule with plenty of water every hour for three or four doses, or until dryness of the throat is noticed; then intermit for three or four hours. (Kyle.)

℞ Pulveris camphoræ..... gr. ¼
Fluidextracti belladonnæ..... ♏⅛
Quininæ bromidi..... gr. ¼
M. et fiat tabella una; mitte talis 8.

Sig.—One-half tablet every hour, to a child of five years. (Holt.)

For the relief of stuffiness and headache, and also to promote the reaction of inflammation, apply heat in the form of a hot water bag or a hot towel, or by holding the face over a basin of steaming water, to which may be added compound tincture of benzoin, ʒi, or spirits of camphor, ʒss, to the pint (protect the upper lip with vaseline). The face steaming may be repeated every hour, if desired, and a small piece of the following menthol ointment may be placed in the nostrils and snuffed up: ℞ Mentholis, gr. i, acidi borici, gr. v, olei gaultheriæ, ♏i, adipis lanæ hydrosi, ʒii, petrolati mollis, ʒvi (St. Clair Thomson). The fluid extract of hamamelis may be snuffed from the hand every two or three hours. Ballenger recommends the application of the leucodescent lamp (500 candle power) for twenty to thirty minutes, over the closed eyes, at a distance of eighteen to twenty inches from the face. He also advocates the establishment of free ventilation and drainage by means of the application of cocaine, 4 per cent., or adrenalin, 1 : 5000 to 2000, or antipyrine, 10 per cent., to the turgid erectile bodies, whenever required (by spray or cotton pledgets); and the administration of strychnine and arsenious acid in tonic doses (see Part 11), and alcohol rubs, "to maintain the tonicity of the vasomotor nervous system."

℞ Cocainæ hydrochloratis..... gr. ii
Camphoræ..... gr. i
Olei rosæ geranii..... gtt. i
Alboleni liquidi..... ʒi
M. Sig.—Two or three drops in each nostril night and morning. (Kyle.)

℞ Cocainæ hydrochloratis..... gr. iv
Mentholis..... gr. i
Sodii bicarbonatis..... gr. ii
Magnesii carbonatis levis..... gr. iii
Sacchari lactis..... ʒiss
M. Dispense in a tightly corked vial.

Sig.—Use a pinch as snuff every two or three hours. (Gleason.)

Cocaine furnishes only temporary relief, and is followed by increased turgescence. It may cause faintness, so that aromatic spirits of ammonia should be kept on hand.

Where the patient cannot remain strictly indoors, one may prescribe, as a mild diaphoretic, the following:

℞ Codeinæ..... gr. i (gr. ⅛ per dose)
Ammonii carbonatis gr. xxiv (grs. 1½ per dose)
Syrupi tolutani.... ʒvi (♏xx per dose)
Glycerini..... ʒiv (♏xiii per dose)
Aquæ, q.s. ad..... ʒiii
M. Sig.—Teaspoonful every hour for four doses, then every two hours. (Modified from C. W. Richardson.)

The bowels, too, should be kept active, in these outdoor cases, by means of effervescent sodium phosphate, one tablespoonful one hour before breakfast; and relief from the stuffiness may be obtained by smelling dry menthol or camphor, or a saturated solution of camphor in alcohol, or carbolic smelling salts.

For headache or general discomfort, one may prescribe phenacetin, gr. v–x, or aspirin, gr. x, or salol, gr. x, with phenacetin, gr. v.

In infants, instil into each nostril, every hour, three drops of a solution of menthol, gr. ss, in liquid albolene, ʒi. In older children, spray the nose every two or three hours with a solution of menthol, gr. i, in liquid albolene, ʒi.

2. Second Stage, or Stage of Flux.—Irrigate (see Nasal Technique) the nasal passages occasionally with quite warm normal saline solution (ʒi ad Oi), or employ inhalations of medicated steam, or one of the following sprays or douches, about every three hours, warmed:

℞ Sodii biboratis,
Sodii bicarbonatis, aa..... gr. v
Aquæ..... ʒi

℞ Sodii bicarbonatis,
Sodii biboratis,
Sodii chloridi,
Sacchari albi, aa..... gr. v
Aquæ..... ʒiii–iv
(St. Clair Thomson.)

℞ Mentholis ..... gr. i
Olei eucalypti ..... ♏iii
Olei gaultheriæ ..... ♏iii
Sodii bicarbonatis ..... gr. xv
Sodii boratis ..... gr. xv
Glycerini ..... ℥iii
Aquæ, q.s. ad ..... ℥i

M. Sig.—One teaspoonful to one ounce of warm water, as a spray. (Casselberry.)

Spray the solution until it reaches the throat.

Follow the above cleansing process by one of the following oily sprays or instillations:

℞ Mentholis ..... gr. xxv
Camphoræ ..... gr. vii
Iodi ..... gr. ss
Benzoinolis, vel,
Albolени liquidi ..... ℥i

M. Sig.—Use with an oil atomizer, twice daily. (Richardson.)

℞ Mentholis ..... gr. i
Olei pini pumilionis ..... ♏v
Olei gaultheriæ ..... ♏iii
Olei eucalypti ..... ♏iii
Benzoinolis ..... ℥ss
Olei vaselini, q.s. ad ..... ℥i

M. Sig.—Use with a double-bulb (Davidson) atomizer. (Casselberry.)

℞ Olei eucalypti ..... gtt. ii
Olei cassiæ ..... gtt. iv
Albolени ..... ℥i

M. Sig.—Instil a few drops with a medicine dropper every few hours. (Kyle.)

Where the secretion is profuse and thin, and in protracted cases, one may employ astringents, *e.g.*, silver nitrate, 1 per cent.; zinc chloride, 1 to 2 per cent.; formaline, 2 per cent.; or the following, ℞ Ext. hamamelidis aq., ℥i, Ext. hydrastis aq. (colorless), ℥iv, Aquæ destillatæ, q.s., ad ℥ii, a few drops in each nostril two or three times daily.

Internally one may prescribe:

℞ Ammonii chloridi. ℥ii (gr. vii per dose)
Tincturæ opii deodorati ..... gtt. xl–lx (gtt. ii–iii per dose)
Sacchari ..... ℥iv
Aquæ camphoræ, q.s. ad ..... ℥iii

M. Sig.—One teaspoonful every two hours for four doses, then every three hours as long as required. (Kyle.)

Iodine (see Part 11) is recommended internally.

Ballenger recommends aconite or belladonna for the purpose of lessening the secretion in the second stage; but St. Clair Thomson condemns the use of these agents.

In infants, cleanse the nostrils with an alkaline solution by means of an eye-dropper; after which, instil a few drops of a one per cent. solution of camphor in benzoinol or albolene.

Prophylaxis.—This embraces fresh air day and night, daily exercise in the fresh air, clothing neither too light nor too heavy, dry stockings, heavy-soled shoes, linen-mesh underwear, rubbers in wet weather, no neck protectors, frequent warm baths in a comfortable room, followed by a moderately cool sponge and brisk rubdown with a coarse towel, proper house ventilation, avoidance of overheated rooms, dust, dietetic errors, the excessive use of alcohol and tobacco, etc., and the correction of nasal defects (spurs, septal deflection, chronic rhinitis, adenoids, etc.).

Rhinitis, Anæmic.—See Anæmic Rhinitis.

Atrophic.—See Atrophic Rhinitis.

Caseosa.—See Caseous Rhinitis.

Chronic, with Collapse of the Erectile Tissue.—L. *chrońicus*, from Gr. *χρόνος* time. See Anæmic Rhinitis.

Hypertrophic.—See Hypertrophic Rhinitis.

Intumescent.—L. *intumeścens*, swollen. See Rhinitis, Simple Chronic.

Simple.—See Rhinitis, Simple Chronic.

Turgescent.—L. *turgeścens*, swelling. See Rhinitis, Simple Chronic.

Vasomotor.—L. *vas*, vessel + *mot'or*, mover. See Rhinitis, Simple Chronic.

Edematous, Acute.—See Œdema of the Septum.

Fibrinous.—See Fibrinous or Membranous Rhinitis.

Hypertrophic.—See Hypertrophic Rhinitis.

Intumescent, Chronic.—L. *intumeścens*, swollen. See Rhinitis, Simple Chronic.

Membranous.—See Fibrinous or Membranous Rhinitis.

Œdematous, Acute.—See Œdema of the Septum.

Purulent.—See Purulent Rhinitis.

Sclerotic.—Gr. *σκλήρωσις* hardness. See Atrophic Rhinitis.

Sicca.—L. *sicćus*, dry. See Anæmic Rhinitis.

Rhinitis, Simple Chronic.—Gr. *ῥίς* nose + *-ιτις* inflammation; L. *sim'plex*, simple; *chrońicus*, from Gr. *χρόνος*, time. **Synonyms.**—Chronic coryza; chronic nasal catarrh; chronic intumescent rhinitis; chronic rhinitis with turgescence; chronic vasomotor rhinitis; alternating stenosis.

A chronic inflammatory affection of the nasal mucous membrane, characterized by

fugitive turgescence of the erectile tissue of the inferior turbinates, with resulting intermittent nasal obstruction, worse after meals and at night, etc., associated with a thick, mucous, nasal or postnasal discharge. The surface of the inferior turbinals is smooth and boggy, and the swollen tissues shrink on the application of cocaine (4 per cent.) or adrenalin (1 : 2000); whereas, in hypertrophic rhinitis (*q.v.*), the turbinal mucous membrane is rugose and firm, and is not contracted by cocaine or adrenalin.

Hypertrophy, however, eventually results in untreated cases, and sometimes atrophy.

Possible sequelæ include dyspepsia, chronic intoxication, anæmia, affections of the accessory sinuses, brain, eustachian tube, middle ear, eye, and skin (acne rosacea, eczema, erysipelas), descending respiratory affections, and, in children, deformities of the chest and spine. The treatment of simple chronic rhinitis is very satisfactory.

Etiology.—The causes of acute rhinitis (*q.v.*); habitual exposure to dust and irritating inhalations; habitual use of cocaine; an infection (syphilis, tuberculosis, etc.); foreign bodies; septal deviations; adenoids; sinusitis (ethmoiditis); constitutional derangements (pregnancy, dyspepsia, malnutrition, lithæmia, chronic nephritis, diabetes, constipation, anæmia, neurasthenia, etc.).

Adenoids and septal deformities are probably the commonest causes.

Treatment.—Attend, first of all, to any possible etiological influence, local or constitutional; and enjoin the observance of correct hygiene, *e.g.*, adequate rest and exercise, rest before and after meals, fresh air day and night, avoiding draughts, adequate clothing, neither too light nor too heavy, preferably linen-mesh underwear, dry stockings, heavy-soled shoes, rubbers in wet weather, no neck protectors, proper house ventilation, avoidance of over-heated rooms, dust, dietetic errors, alcohol and tobacco, a daily morning warm bath in a comfortable room, before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel, regulation of the bowels, and a simple, bland, nutritious diet. Tonics containing strychnine and arsenic (see Part 11) and general massage are of value.

Instruct the patient to cleanse the nasal passages night and morning, only so long as any discharge or stagnant secretion is present, with sodium chloride, bicarbonate, or biborate, one teaspoonful to the pint of hot water, using for the purpose a fountain syringe, or a two-ounce hard rubber syringe, or a rubber-bulb syringe, or a three or four ounce pear-shaped syringe, or a dental bulb syringe with postnasal tip. Give the following directions: In irrigating the nose, hold the head horizontally over a basin, first on one side, then on the other, and insert the nozzle of the syringe each time in the upper nostril. To avoid the entrance of fluid into the eustachian tube and middle ear, keep the mouth wide open during the irrigation, breathe through the mouth, and refrain from swallowing. After each injection, clear the nose of mucus by blowing.

Following is a selection of prescriptions in common use:

℞ Sodii bicarbonatis,
Sodii biboratis,
Sodii chloridi,
Sacchari albi, aa..... gr. v
Aquæ..... ʒiii–iv

M. Sig.—Use warmed night and morning, with atomizer or Birmingham nasal douche. (St. Clair Thomson.)

℞ Sodii biboratis,
Sodii bicarbonatis,
Sodii chloratis,
Potassii bicarbonatis, aa..... gr. xv
Aquæ..... ʒii

M. Sig.—Use, warmed, night and morning, as a spray or douche. (Kyle.)

℞ Sodii bicarbonatis,
Sodii biboratis, aa..... ʒi
Acidi carbolici..... ʒss
Glycerini..... ʒi
Aquæ, q.s. ad..... ʒiv

M. Sig.—Add to one quart of warm water and use as an irrigation. (Gleason.)

Follow the cleansing of the nasal chambers with a spray or instillation of liquid albolene, liquid vaseline, benzoinol, or cosmoline.

St. Clair Thomson says that carbolic acid "should not be ordered in chronic cases, for fear of injuring the sense of smell." He also deprecates the use of astringents, such as zinc and alum, and of powders, as irritating and deleterious to the sense of smell.

Kyle, Gleason, and Richardson, however, have the patient report to the office every other day, when after cleansing and drying the nasal mucous membrane, and perhaps the nasopharynx and pharynx, they apply, by means of a cotton-wound applicator inserted as high as possible, one of the following preparations ("until the tissues are sufficiently retracted"), viz.,

℞ Solut. aq. ichthyol, 20–40 per cent. (Kyle.)

℞ Solut. aq. alcoholis, 25 per cent. (Kyle.)

℞ Acidi tannici..... gr. xl
Glycerini..... ʒi
(Gleason.)

℞ Iodi ..... gr. v
Potassii iodidi ..... gr. xv
Glycerini ..... ʒi
(Gleason.)

℞ Mentholis ..... gr. xxv
Camphoræ ..... gr. vii
Iodi ..... gr. ss
Benzoinolis ..... ʒi
(Richardson.)

℞ Ichthyol ..... gr. ii
(more or less according to irritation)
Petrolati mollis ..... ʒss

Later, zinc ointment or boric ointment (J. Biernacki.)

In plethoric individuals, Kyle advises the use of stronger astringents, *e.g.*, silver nitrate, 4 to 8 per cent.; zinc sulphocarbolate, 2 to 5 per cent.; zinc chloride, 3 to 5 per cent. Follow the astringent application with the following spray:

℞ Mentholis ..... gr. v
Camphoræ ..... gr. xx
Alboleni liquidi ..... ʒii
(Gleason)

Gleason says that a cure may be effected by this form of treatment in three to six weeks.

In cases uninfluenced by the above treatment, cauterization of the turgid parts is available. Richardson's technique is as follows: First dry the mucous membrane thoroughly; then exsanguinate and cocainize the parts by the application of a 5 per cent. solution of cocaine on cotton pledgets, which are allowed to remain in place five to ten minutes. Then collect a few crystals of chromic acid on the warmed end of a probe, and heat the part of the probe just beyond the crystals until the latter melt; on cooling they form a red coating. Now dry the mucous membrane again, and make a "number of minute points of cauterization" in the turgid areas, wherewith, "as it were, to pin down the mucous membrane to the periosteum." Monochloracetic acid or the galvanocautery, with a finely pointed electrode, may be used in the same way making four to six minute, deep (not linear) cauterizations. Afterward wash out the nasal cavity with an alkaline solution, say the following:

℞ Sodii bicarbonatis ..... gr. xxx
Sodii biboratis ..... gr. xlv
Acidi carbolici ..... ♏vi
Glycerini ..... ʒi
Aquæ destillatæ ..... ʒvi (M.)

Dench cauterizes an area about the size of a split pea over the most turgid part of the inferior turbinate, and repeats the procedure elsewhere after the slough from the first cauterization has separated (five to ten days), and so on, until the patency of the canal is restored.

Chemical caustics, too, may be applied in a single line along the inner border of the inferior turbinal; or a fine needlelike electrode may be pushed backwards beneath the mucous membrane.

Electrolysis (bipolar, with a double electrolytic needle), employing a current of five to ten milliampères, gradually introduced for two to five minutes, and gradually withdrawn, is effectual, says Kyle.

Great conservatism should be exercised in the employment of caustics so as to destroy as little as possible of the secreting surface.

For diffuse turgidity and hypertrophy, gradual pressure with soft rubber splints or a malleable silver tube (see Fig. 106) is well recommended. The silver tube is worn only one or two hours at a time at first, and the pressure and the duration of its application are gradually increased.

Rhinitis, Suppurative.—L. *sub*, under + pus, *pur'is*, pus. See Purulent Rhinitis.

Turgescent, Chronic.—L. *turges'cens*, swelling. See Rhinitis, Simple Chronic.

Vasomotor, Chronic.—L. *vas*, vessel + *mo'tor*, mover. See Rhinitis, Simple Chronic.

Rhinolith.—Gr. *ῥίς* nose + *λίθος* stone. See Foreign Bodies in the Nose.

Rhinopharyngeal Affections.—Gr. *ῥίς* nose + *φάρυγξ* pharynx. See Throat Diseases, Part 9.

Rhinorrhœa, Cerebrospinal.—See Cerebrospinal Rhinorrhœa.

Spasmodic.—Gr. *ῥίς* nose + *ῥοία* flow; *σπασμός* spasm. See Hay-Fever.

Rhinoscleroma.—See Skin Diseases, Part 5.

Saddle-Back Nose.—Try a tibial or rib transplant.

Sarcoma Nasi.—Gr. *σαρξ*, *σαρκός* flesh + *-ωμα* tumor; L. *nas'us*, nose. See Tumors of the Nose.

Scleroma.—See Rhinoscleroma in Part 5.

Sclerotic Rhinitis.—Gr. *σκλήρωσις* hardness. See Atrophic Rhinitis.

Septum, Abscess of the.—L. *sæp'tum* septum. See Abscess of the Septum.

Adhesions of the.—See Adhesions of the Septum.

Deformities of the.—See Deformities of the Septum.

Edema of the.—See Œdema of the Septum.

Hæmatoma of the.—See Hæmatoma of the Septum.

Septum, Œdema of the.—See Œdema of the Septum.

Perforation of the.—See Ulceration and Perforation of the Septum.

Synechiæ of the.—Gr. *συνέχεια* continuity. See Adhesions of the Septum.

Ulceration of the.—See Ulceration and Perforation of the Septum.

Simple Chronic Rhinitis.—See Rhinitis, Simple Chronic.

Sinusitis.—L. *sinus*, cavity + Gr. *-ιτις* inflammation. Frontal headache, most severe upon awaking in the morning, as contrasted with ocular headache, which occurs during the day from using the eyes, dizziness aggravated upon stooping, and present when the eyes are closed, in distinct on from ocular vertigo, sense of pressure between the eyes, tenderness on pressure with the finger tip directed upward and well under the roof of the orbit at its inner angle, avoiding the supraorbital nerve, all suggest frontal sinusitis.

Tenderness on pressure toward the median line "a little above the inner canthus of the eye and a little deeper in the orbital cavity than the canthus," points to ethmoiditis.

Tenderness on pressure over the canine fossa, painful teeth, and the absence, in the transillumination test (performed by holding an electric bulb in the closed mouth), of a "red pupillary reflex, a crescent of light corresponding to the position of the lower eyelid, a sense of light in the eye when closed," and a translucent sclerotic, noted on depressing the lower eyelid, point to maxillary sinusitis. The transillumination test, however, is not infallible.

In sphenoidal sinusitis, the headache is usually, but not always, felt in the occipital region on the affected side.

Other signs and symptoms of sinusitis are face-ache or neuralgia, mental dulness and depression, nasal obstruction, nasal or post-nasal catarrh, rapidly recurring polypi, caseous, hypertrophic, or atrophic rhinitis, parosmia, anosmia, or cacosmia, localized inflammatory œdema and tenderness, and a cloudy appearance of the sinus area on the skiagraphic plate.

Suppurative sinusitis is accompanied by a unilateral, purulent, nasal discharge. The posterior ethmoidal and the sphenoidal sinuses drain posteriorly into the superior meatus; while the frontal, anterior ethmoidal and maxillary sinuses drain anteriorly into the middle meatus. The nasal (tear) duct drains into the inferior meatus. Aid in ascertaining the origin of the pus is given by Sondermann's, or Brawley's modification of Sondermann's suction apparatus. The nose is first carefully wiped out with pledgets of cotton-wool moistened with a 2 to 5 per cent. solution of cocaine. With the nasal tips of the suction apparatus in position in each nostril, and the tap water turned on, the patient is told to say a prolonged "hick," whereat the pus is drawn from the affected sinuses, and may be seen in the various characteristic locations upon subsequent examination of the nose.

Fraenkel's test for maxillary sinusitis is as follows: The patient bends the head "well forward between the knees, with the affected side uppermost." When he again raises his head, inspection will reveal pus in the middle meatus, if the maxillary antrum is affected.

The above tests are best made in the morning before the sinuses have become emptied.

In chronic cases in which it is uncertain as to which sinus or sinuses are affected, one may resort to exploratory puncture, first of the maxillary antrum. St. Clair Thomson's method of procedure is as follows: First tuck a pledget of cotton-wool, soaked in equal parts of adrenalin and 20 per cent. cocaine, well under the inferior turbinal, one to one and a half inches from the nasal orifice; and anæsthetize also the anterior part of the septum. After ten to thirty minutes, remove the cotton pledgets, and direct a hollow needle, either straight (Lichtwitz), or curved (Schmidt; Myles), high up under the inferior turbinal, about one to one and a half inches from the orifice of the nose, and towards the outer canthus of the eye. Then attach a Politzer bag to the hollow needle and pump air through the cavity. Foul pus and air bubbles may then appear below the middle turbinal. Then forcibly syringe through the hollow needle a warm, sterile, normal saline or boric acid solution (℥i ad Oi), and receive the wash in a black vulcanite tray in order that the presence of pus or debris may be detected. Afterward blow out all fluid from the antrum by means of the Politzer bag connected with the exploring needle.

Small quantities of pus may be detected by the effervescence produced by the injection of hydrogen peroxide.

If, however, there is a carious bicuspid or first molar tooth on the suspected side it should be removed, under general anæsthesia, and by means of a large sized hand-drill, a perforation into the antrum should be made, preferably through the inner

socket of the tooth. When the patient has recovered from the anæsthesia, the same procedure as described above should be pursued. The opening may be maintained, if desired, by means of a rubber obturator.

If, on waiting for ten to twenty minutes after exploring, washing and blowing out the maxillary antrum, pus is again found in the middle meatus, it has evidently come from the frontal sinus or the anterior ethmoidal cells, usually both. The maxillary antrum may even serve as a reservoir for this pus.

To distinguish chronic frontal from anterior ethmoidal sinusitis, the frontal sinus should be catheterized, washed and blown out, after amputating the anterior end of the middle turbinal.

If chronic sphenoidal sinusitis is suspected (in sphenoidal and posterior ethmoidal sinusitis pus appears anteriorly in the olfactory cleft, although it may be found here also in empyema of the other sinuses; the discovery, on post rhinoscopic examination, of pus on top of the middle turbinate, or of pus and crusts in the vault of the epipharynx, points to posterior ethmoidal and sphenoidal disease), the sinus should be catheterized, after the removal of the middle turbinal, if necessary, and its cavity washed and blown out (the standard textbooks should be consulted for technique.

The possible complications and sequelæ of sinusitis are as follows: eustachian catarrh; otitis media; ocular disease (optic neuritis, orbital cellulitis, osteitis and periosteitis, retrobulbar abscess, conjunctivitis, marginal blepharitis, keratitis, errors of refraction or accommodation, asthenopia, choroiditis, iridocyclitis, neuroretinitis, restricted field or loss of vision, scotomata, photophobia, lachrymation, epiphora, blepharospasm, ptosis, cataract, hemorrhagic retinitis, glaucoma, mydriasis); cough; pharyngitis; tonsillitis; laryngitis; asthma; chronic bronchorrhœa; recurrent broncho-pneumonia; gastro-intestinal indigestion; anæmia; extradural and brain abscess; meningitis; sinus thrombosis (superior longitudinal and cavernous); pyæmia.

Etiology.—Acute infectious diseases (influenza, scarlet fever, measles, pneumonia, typhoid fever, cerebrospinal meningitis, diphtheria, smallpox, erysipelas, glanders, mumps, gonorrhœa); acute rhinitis; nasal stenosis (chronic turgescent rhinitis, hypertrophic rhinitis, septal deformities, adenoids); atrophic rhinitis; foreign bodies, including larvæ, vomitus, etc.; syphilis; tuberculosis; nasal gonorrhœa; nasal douching; intranasal tamponing; intranasal operations; use of the galvanocautery in the nose; external traumatism; diving into water feet foremost; dental infection (the upper second bicuspid and first and second molars are situated close beneath the floor of the maxillary sinus); malignant tumors; mercury, phosphorus, and lead poisoning; extension of inflammation from one sinus to another.

Treatment.—A. Acute Sinusitis.—The aims of treatment are to promote the reaction of inflammation and to reduce the swelling of the nasal mucous membrane, so as to open the ostia of the sinuses, and thereby secure drainage.

The patient should be put to bed, and calomel administered in divided doses (followed by a saline (see Part 11) ; the diet should be liquid. The reaction of inflammation is promoted by the application to the forehead, nose, and cheek of a hot-water bag, or hot, moist compresses; also by passing "back and forth before the closed eyes, at a distance of twelve to eighteen inches, for twenty to thirty minutes," the 500 candlepower leucodescent lamp (Ballenger). The patency of the ostia of the sinuses is established by spraying the nose with adrenalin, 1:10,000 to 1:5000, every two hours, or whenever the nose feels stuffy or the headache or sense of pressure returns. Every two or three hours, a spray of menthol, gr. iii ad ℥i of albolene, benzoinol, cosmoline, or olive-oil, should be applied by means of a nebulizer. Once a day the physician may cocainize the middle meatus by placing within it a pledget of absorbent cotton saturated with 4 per cent. cocaine solution, followed by a spray of antipyrine solution, 4 to 10 per cent., and a solution of menthol in oil, to prolong the ischæmic effects of the adrenalin and cocaine. Kyle recommends the application of 40 per cent. ichthyol in lanolin to the middle meatus or high up in the nasal tract. Thomson recommends nasal inhalations of mentholized steam for five or six minutes every hour:

℞ Mentholis ..... gr. x
Alcoholis ..... ℥i

M. Sig.—A teaspoonful in a pint of steaming water.

Antiseptic gargles and sprays are advisable.

Slow irrigation of the nose with quite warm normal saline solution from a fountain syringe (see Nasal Technique) would seem to be very useful, if the patient takes proper precautions against the entrance of the fluid into the middle ear, *i.e.*, by holding the head horizontally over a basin, by opening the mouth wide and breathing through the

mouth, and by refraining from swallowing; but Thomson condemns it.

Sondermann's suction apparatus may be used; or suction may be accomplished by the patient holding his nose and then expanding the chest.

Gleason recommends inflation of the sinuses by means of Politzer's air bag. The procedure is as follows: First cocainize the middle meatus; then have the patient lie upon the unaffected side, puff out his cheeks, and close the external auditory meati with his finger tips, so as to prevent overinflation of the tympanum. Now fill the Politzer bag with iodine-chloroform or menthol-chloroform vapor, by inserting the nose-piece of the compressed bag into a bottle containing the vapor above a solution of the iodine or menthol in chloroform, and then allowing the bag to expand. Now insert the nozzle into the nostril, and suddenly compress the bag.

For the neuralgic pains, give phenacetin, antipyrine, or aspirin (see Part 11). Any affected teeth should be removed.

The above measures usually bring about resolution in three or four days. If resolution, however, does not occur, and if external swelling, orbital cellulitis, or cerebral symptoms (delirium, convulsions, coma, rigors) occur, operative measures should be resorted to, *e.g.*, incision of external swellings; perforation and irrigation of the maxillary sinus, if involved; simple opening of the frontal sinus and enlargement of the fronto-nasal duct, if the frontal sinus is affected; opening and irrigation of the sphenoidal sinus, if affected (consult the standard textbooks for the technique of these operative procedures).

B. Chronic Sinusitis.—Chronic maxillary sinusitis is best treated by nasal lavage through an opening through the antronasal wall in the inferior meatus, in which it is usually necessary to amputate the anterior end of the inferior turbinal. Inveterate cases, however, require the Caldwell-Luc operation, in which an opening is made both through the canine fossa and the antronasal wall. Buccal lavage through a tooth socket, where such is available, is not usually efficacious (consult the standard textbooks for the technique of these operations, and for the treatment of chronic disease of the other sinuses).

Conservative methods of treatment should be given the preference. These embrace the establishment of drainage and ventilation by the correction of septal deformities and turbinal hypertrophies, the reduction of turgescence, the removal of polypi, adenoids, and an enlarged middle turbinate, and if need be, the introduction of a cannula into the involved sinus and the injection of, say, 10 per cent. argyrol.

Mucocele (L. *mu'cus*, + Gr. *κήλη* tumor) of a nasal accessory sinus is a cystic distention of the sinus with mucus, characterized by an elastic swelling which sometimes crackles like parchment on palpation, and which is non-inflammatory unless the contents of the sac become infected. The treatment is surgical (for which consult the standard textbooks).

Smell, Absent.—See Anosmia.

Bad.—See Cacosmia.

Increased Sense of.—See Hyperosmia.

Loss of.—See Anosmia.

Perverted Sense of.—See Parosmia.

Sneezing, Paroxysmal.—Gr. *παροξυσμός* See Hay Fever.

Spasmodic Rhinorrhœa.—Gr. *σπασμός*. spasm; *ῥίς* nose + *ῥοία* flow. See Hay Fever.

Sphenoidal Sinusitis.—Gr. *σφήν* wedge + *εἶδος* form. See Sinusitis.

Stenosis, Alternating.—Gr. *στένοσις* narrowing. See Rhinitis, Simple Chronic.

Suppuration, Nasal.—L. *sub*, under + *pus, pur'is*, pus. See Purulent Rhinitis.

Synechiæ, Septal.—Gr. *συνέχεια* continuity. See Adhesions of the Septum.

Syphilis.—See Part 1, on General Medicine and Surgery.

Technique, Nasal.—See Nasal Technique.

Traumatism, Nasal.—Gr. *τραῦμα* wound. See Fractures of the Nose in Part 10.

Tuberculosis, Nasal.—L. *tuber'culum*, nodule. See Lupus of the Nose and Throat in Part 9.

Tumors of the Nose.—L. *túmor*, from *tu'mere*, to swell. **A. Benign Tumors.**—(1) Papilloma (L. *papil'la*, nipple + Gr. *-ωμα* tumor) is a very rare, smooth or corrugated, red or gray, pediculated growth, generally springing from the septum, more rarely from the inner or inferior surface or the posterior end of the inferior turbinal. It should be completely removed (following cocainization of the surrounding tissues with a 5 to 10 per cent. solution of cocaine applied on pledgets of cotton) with the snare or nasal scissors. The base should then be mopped dry, and well cauterized with chromic acid fused on the end of a probe (first warm the probe, dip it in the chromic acid crystals, and warm the part of the probe next beyond the crystals until the latter melt), or cauterized with the galvanocautery. A very large growth may require an external operation, *e.g.*, that of Moure or of Rouge.

(2) Fibroma (L. *fib'ra*, fibre) is a very

rare, firm and smooth growth, which generally arises from the posterior extremity of the middle turbinal, less often from the posterior extremity of the inferior turbinal, the septum, or the floor of the nose. When small, it may be removed with the snare, cutting forceps, or Ballenger's turbinotome. When large, it may be removed piecemeal with cutting forceps. When it invades the surrounding structures, a temporary resection of the superior maxilla or a Rouge operation may be required to remove it.

(3) Angioma (Gr. *ἀγγεῖον* vessel) is a dark red, vascular growth, which usually arises from the cartilaginous septum, rarely from the adjoining floor of the nose or the anterior end of the inferior turbinal. After applying cocaine and adrenalin, strangulate the growth at its base very slowly with the cold wire or galvanocautery loop. If the growth is sessile, place the loop in position, and transfix the tumor with a needle so as to hold the wire in place; or make two elliptical incisions around it; or ligate the tumor in sections with a number of silk ligatures. After removal, scrape the base thoroughly with a sharp spoon, and then sear with the galvanocautery. Apply sterile vaseline, and warn the patient not to blow the nose violently. Keep the patient under observation and cauterize thoroughly any recurrences. Bipolar electrolysis may also be employed (see under Epistaxis).

(4) Adenoma (Gr. *ἀδήν* gland) grows from the septum or ethmoidal region. It bleeds very readily when touched, and shows a tendency to malignant degeneration. It should be completely removed and its base cauterized or curetted to prevent recurrence.

(5) Cysts (Gr. *κύστις* bladder) occur on the floor of the nose. Small cysts may be merely incised, repeating the incision if necessary. Larger ones may have to be dissected out through an incision in the gingivo-labial fold.

(6) Osteoma (Gr. *ὀστέον* bone), enchondroma (Gr. *ἐν* in + *χόνδρος* cartilage), lymphoma (L. *lym'pha*, lymph), lipoma (Gr. *λίπος* fat), and exostoses (Gr. *ἐξ* out + *ὀστέον* bone) occur. If they can not be removed intranasally, an external operation (Rouge's or Moure's) may be required.

B. Malignant Tumors.—Carcinoma (Gr. *καρκίνος*, L. *can'cer*, crab) and sarcoma (Gr. *σάρξ*, *σαρκός* flesh) are not common, but they are much more common than benign tumors. The symptoms of a malignant nasal growth are a unilateral fetid discharge, hemorrhage, increasing obstruction, and ulceration, and later, pain, external deformity, and enlarged glands. Remove a piece of the growth remote from any ulcerated area for microscopic examination. Exclude syphilis, tuberculosis, rhinoscleroma, benign tumors, and foreign bodies. Complete extirpation is, of course, to be accomplished, if possible; by the internal route, if feasible, otherwise by the external route, employing Moure's operation through the side of the nose where the growth is situated in the ethmoidal or sphenoidal region; or employing Rouge's operation, or both combined, or the combined Rouge and Caldwell-Luc operation. In operating within the nose, a subsequent examination should be made, and any visible remnant of the tumor removed. The base of the growth should always be subsequently cauterized with the galvanocautery (St. Clair Thomson). It is advised not to operate unless the growth is in an early stage.

In inoperable cases, apply orthoform powder to relieve pain. To ulcerations apply dilute hydrochloric acid, or formaline (5 per cent. solution), every other day, to arrest their progress. The X-ray or radium (see Part 1) may possibly retard the growth of the tumor. Employ gauze plugs to check hemorrhage. Coley's fluid (mixed toxins of erysipelas and bacillus prodigiosus) and arsenic (see Part 11) may be tried for inoperable sarcoma. Liebenmann reports a cure of sarcoma of the nasopharynx by the introduction of a silver tube containing 53.5 mg. of mesotherium, the tube being wrapped in cotton and rubber tissue, which was placed in the retronasal space and left in situ for forty-eight hours on two occasions, once at the end of December and again during the early part of January. By the middle of March the process was brought to a standstill, and the entire growth disappeared (*Practical Medicine Series*, 1917).

In nasal sarcoma, O. J. Stein applied 100 mg. of radium uninterruptedly for five hours for three consecutive days, repeated the treatment after nineteen days, again thirty days later and again after sixty days, with cure; 4100 milligram hours were used in the nose, and 2125 mg. hours to the enlarged glands.

Diathermy (see Part 1) may be of value.

Turgescent Rhinitis, Chronic.—L. *turgeścens*, swelling. See Rhinitis, Simple Chronic.

Ulceration, Nasal.—See Nasal Ulcers.

Ulceration and Perforation of the Septum.—L. *ul'cus*, ulcer; *perfora're*, to pierce through; *sæp'tum*, septum. **Etiology.**—Deposition of dust or discharge over the bleeding

area in persons who are subject to epistaxis (*q.v.*,); irritating fumes (chromic acid, copper-arsenic green); septal deformity; traumatism (picking at the nose); the galvanocautery or other caustics; hæmatoma of the septum; abscess of the septum; acute infectious diseases (diphtheria, measles, smallpox, scarlet fever, typhoid fever, typhus fever, rheumatism); congenital anomaly (extremely rare); syphilis (rare); tuberculosis (rare).

Treatment.—In the ulcerative stage, first soften the scab by means of a warm alkaline lotion, such as Dobell's or Seiler's (see Part 11) solution, applied frequently during the day. Then gently remove the scab and apply a mild mercurial ointment: ℞ Hydrargyri ammoniati, gr. x, ad petrolatum molle, ℥i. If the ulcer is sluggish, curette it very gently, and apply, but only very occasionally, a weak caustic: silver nitrate, gr. v–x–xx ad ℥i; or chromic acid, gr. v–x ad ℥i; or formalin, 3 per cent.; or zinc chloride, 3 per cent.

After healing has occurred, instruct the patient to avoid picking or violently blowing the nose, and advise the occasional use of a mild alkaline lotion and inunction of the parts at bedtime with vaseline.

If perforation occurs, treat the inflamed margins as before, and apply an occasional mild caustic, until healing occurs. If bare cartilage projects beyond the margin of the perforation, remove it after first reflecting the overlying mucosa.

Vasomotor Rhinitis, Chronic.—L. *vas*, vessel + *mo'tor*, mover. See Rhinitis, Simple Chronic.

APPENDIX

Schema for the Nose and Throat History and Examination

No.

Name *Address* *Date*

Single *Married* (how long) *Widow* (how long) *Occupation*

No. and ages of children *Age* *Race*

Complaint

General appearance

To what does the patient attribute his illness:

Height Weight

History of Present Illness.

Appropriate or proper weight (see Part 1)

Hygiene: Rest Exercise

Recreation Diet Sleep

Bowels Ventilation Baths

Sexual habits Tea and coffee

Narcotics Alcohol Tobacco

Previous History

Family History

Examination:

External nose (skin, nasal bones, alæ nasi) Internal nose

Mouth (lips, cheeks, tongue, teeth, gums, floor of mouth) Palate and uvula

Fauces and tonsils Nasopharynx

Pharynx Larynx Sinuses

Ears Eyes Cervical lymph glands

Other organs and tissues

Diagnosis:

(On other side of page)

Treatment (including dates and whether at office or home):

The Nasal Armamentarium.—**1. Office and Operating Room Equipment.**—X-ray machine; straight back revolving chair with adjustable back and head-rest; two piano stools; table; cabinet; swinging fountain cuspidor; cupboard for sterile goods; Rochester sterilizer for dressings; instrument sterilizer (fish kettle); kerosene, gas (argand burner) or 50 candlepower electric lamp; Mackenzie condenser; folding portable lamp for laryngoscopy, etc.; head mirror with Gleason's black leather head-band; sink with foot-lever spigots; Kirstein head lamp; Champion or Little Wonder pump for furnishing compressed air for atomizers; Pynchon and Hubbard regulating air tanks; Sondermann's, or Brawley's modification of Sondermann's suction apparatus; nasal specula: Myles's, Gleason's, Allen's, Hartmann's bivalve, Bosworth's open wire; DeVilbiss atomizers with set of tubes, some for introduction through the nose into the post-nasal space; Magic atomizers; nasopharyngeal syringes (piston and bulb) with post-nasal tips; long nasal probe; applicators with corrugated tips; frontal sinus probe; palate retractor; Jarvis's needles and snare; Krause, Blake, or Lack snare, threaded with No. 5 piano wire; Grünwald's or Luc's punch forceps; Bosworth's nasal saw; Holbrook Curtis saw; Lake's rubber nasal splint; Kyle's saw; Zwaardemaker's olfactometer; Seiler's septometer; Yeo's inhaler; transillumination lamps; nasal dressing forceps; Hartmann's frontal sinus cannula; Krause's or Myles's curved antrum trocar with obturator; Hajek's straight trocar and cannula; file saw; Felsbach dilator; soft rubber obturators and hard vulcanite obturators for maintaining patency of opening in maxillary alveolus; Gottstein's cotton plugs; toothed forceps; fountain syringe (metal or glass); two-ounce hard rubber syringe; rubber bulb syringe; three- or four-ounce pear-shaped syringe; dental bulb syringe with post-nasal tip; Asch's hollow splint, various sizes; Mayer's hollow splint, various sizes; antrum drainage tubes; silver infundibulum irrigation tube; Roe's metallic form for fracture of nose; Adam's nasal truss; strabismus hook; Roe's intra-nasal spring; malleable silver tube; straight hollow needle (Lichtwitz); curved hollow needle (Schmidt, Myles); six-flask Globe multinebulizer; powder blower; Politzer bag; galvanocautery with tips; VanSant's hot air apparatus; black vulcanite tray; Bunsen burner or alcohol lamp; Goldstein's chromic acid applicator for submucous cauterization; Beckmann's serrated scissors; Bellocq's post-nasal tampon cannula; Casselberry's scissors; Holmes's middle turbinal scissors; large sized hand drill for perforating the antrum through the tooth socket; Ballenger's turbinal knife, ethmoid curette, right-angle knife, swivel knife, V-shaped septum gouge, mucosa knife, and mucosa swivel knife; Andrews's sphenoidal probe, cannula and knives; Halle's frontal sinus drills with handle; Good's rasp and guide; Ingal's pilot burr and guide; Ostrum's localizer for the pulley of the superior oblique muscle; Vail's antrum saw; Corwin's antrum chisel; Ostrum's forward-cutting antrum forceps; Well's trocar cannula rasp; Nobel-Cordes forceps; Asch's straight and curved scissors; Asch's septum forceps; Weber's siphon nasal

douche; Fetterolf's file saw; Hajek-Ballenger muco-perichondrial elevators, sharp and blunt; Foster septum speculum; Ballenger-Foster perpendicular-plate bone forceps; Hurd's bone-septum forceps; Simpson's nasal sponge splint; Killian's chisels; Gleitsman powder blower; ulcer curette; Yankauer's intranasal suture instrument; Birmingham nasal douche; Volkmann spoon or ring knife; Hawley's spray tube; leukodescent therapeutic lamp, 500 candlepower; modified Sajous snare; vacuum aspirator; Bosworth's saw; alligator-jaw biting forceps; Choleway's spoke-shave; Lombard's bone forceps; Meyer's vulcanite nasal splints; Gitelli's bone forceps; Roe's septum forceps; Stein's antrum gouge; Hajek's sphenoidal forceps; Ballenger's turbinotome, angular ethmoid knife, and hook ethmoid knife; Beck's paraffin screw-syringe; Halle's antrum trocar, cannula, and obturator; Myles's alligator nasal cutting forceps; Grünwald's cutting forceps; Gottstein's nasal curette; Löwenburg's postnasal forceps; Emil Mayer's pharyngeal curette; Schrœter's forceps; electric-motor drills; finger bowl; galvanic battery; hæmostatic forceps; Bernay's compressed sponge; Allen's probe; Bellocq's cannula; soft gum catheter; Faradic current; Felsbach dilator; Francis dilator; hot-water bag; eye-droppers; oil atomizer; Davidson double-bulb atomizer; sterile cotton; sterile gauze (one-half to one inch wide ribbon gauze).

Internal Drugs Mentioned in the Text.—(a) ALTERATIVES AND TONICS (L. *alterar'e*, to change; L. *to'nus*, tone).—Potassium iodide; arsenious acid; arsenious iodide; double sulphide of arsenic; quinine bromide; compound wine of iodine; strychnine; elixir ferri, quininæ et strychninæ phosphati; syr. ferri iodidi; codliver oil; syrup of hypophosphites; bovinine; dilute nitric acid; dilute hydrochloric acid.

(b) NEURO-MUSCULAR SEDATIVES (L. *sedo*, I allay).—Ether; chloroform; whiskey; morphine; pulv. opii; Dover's powder; deod. tr. opii; codeine; rhinitis or coryza tablets containing morphine, belladonna, and quinine; fl. ext. belladonna; ext. belladonna; atropine; aq. laurocerasi; phenacetin; aspirin; acetanelid; pyramidon; valerian; asafœtida; potassium bromide; musk.

(c) PURGATIVES (L. *purga're*, to cleanse).—Calomel; mag. carb. levis; sod. phos. efferves.; sod. sulph; Rochelle salt.

(d) HÆMOSTATICS (Gr. *αἷμα* blood + *στατικός* standing).—Gelatine; fl. ext. ergot; gallic acid; dilute sulphuric acid; lactate and chloride of calcium.

(e) FLAVORS.—Ol. menth. pip; attar of roses; spiritus menthæ piperitæ; citric acid; ol. rosæ geranii.

(f) VASODILATORS (L. *vas*, vessel).—Nitroglycerin; sodium nitrite.

(g) DIAPHORETICS (Gr. *διά* through + *φορεῖν* to carry).—Fl. ext. pilocarpine; tr. aconite; salol; aspirin; Dover's powder.

(h) RESPIRATORY STIMULANTS AND EXPECTORANTS (L. *ex*, out, + *pec'tus*, breast).—Ammonium carbonate; ammonium chloride; syr. tolutani; eucalyptol; ol. eucalypti; toluol; tr. eucalypti; pulv. sanguinariæ.

Miscellaneous.—Chaulmoogra oil; Fehling's solutions; pollantin; distilled water; potassium bicarbonate; diphtheria antitoxin; coumarin; Coley's fluid (mixed toxines of erysipelas and bacillus prodigiosus).

Local Preparations Mentioned in the Text.—(a) ANTISEPTICS AND ASTRINGENTS (Gr. *ἀντί* against + *σήψις* putrefaction; L. *ad*, to + *strin'gere*, to bind).—Boric acid; sodium chloride; aristol; alum; hydrogen peroxide; perhydrol; tannic acid; ung. hydrarg. dil.; ung. ac. pyrogal.; bismuth subnitrate; lead acetate; pyoktannin; comp. tincture benzoin; boroglyceride; alcohol; sodium bicarbonate; sodium biborate; iodine; formaline; aq. ext. hamamelidis; aq. ext. hydrastis (colorless); ichthyol; zinc sulphocarbolate; Dobell's solution; Seiler's solution; bichloride; thymol; resorcin; balsam of Peru; absolute alcohol; ammoniated mercury; zinc stearate; alumnol; zinc sulphate; spt. vini rectificati; iodol; sodium chlorate; radium; sanitas oil.

(b) EMOLLIENTS, PROTECTIVES, AND MENSTRUA (L. *emol'lio*, I soften).—Vaseline; lanolin; liquid albolene; glycerine; mucil. acaciæ; sacchar. lactis; sacchar. albi; benzoinol; paroline; zinc oxide; collodion; olive oil; lignol; liquid paraffin; ung. paraffini; lycopodium; cosmoline; ung. zinci oxidi.

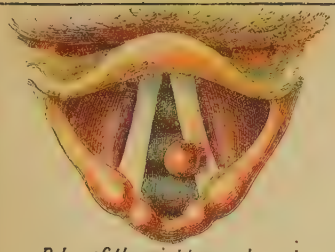
(c) STYPTICS (Gr. *στύφειν* to contract).—Adrenalin, 1 : 1000; cocaine; antipyrine; gelatine; fl. ext. hamamelidis; perchloride of iron; gallic acid; liq. ferri sesquichloridi.

(d) CAUSTICS (Gr. *καίειν* to burn).—Chromic acid; silver nitrate; trichloracetic acid; carbolic acid; zinc chloride; monochloracetic acid; acetic acid; pure concentrated hydrochloric acid; pure nitric acid; lactic acid; acid nitrate of mercury.

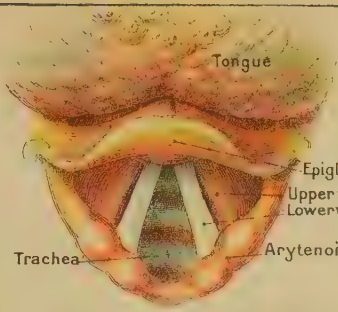
(e) MUCOUS MEMBRANE STIMULANTS.—Tablets of sodium chloride, gr. $\frac{1}{8}$; ol. cassiæ; ol. santali; camphor; spt. camphor; menthol; ol. gaultheriæ; carbolic smelling salts; ol. cinnamomi; ol. eucalypti; ol. pini pumilionis; aq. camphor; eucalyptol; oil of cloves; ol. myrti; tr. eucalypti; spt. menth. pip.

(f) LOCAL ANODYNES (Gr. *ἀν* without + *ὀδύνη* pain).—Orthoform; cocaine.

(g) COUNTER IRRITANT.—Mustard.

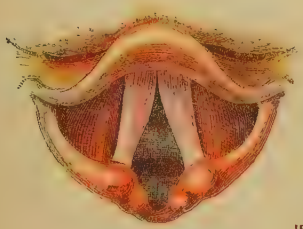


Polyp of the right vocal cord

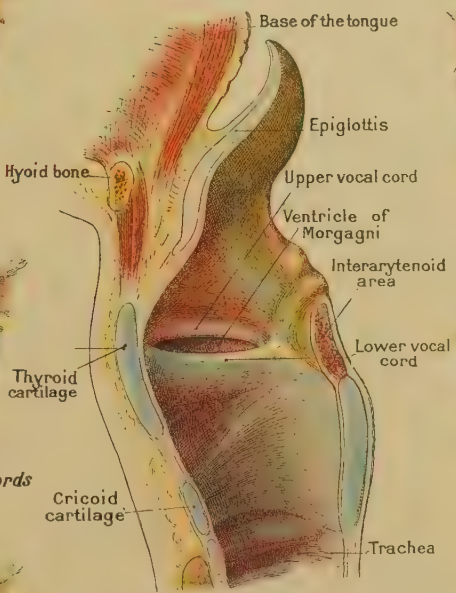


NORMAL LARYNX FROM ABOVE

Tuberculosis of the larynx

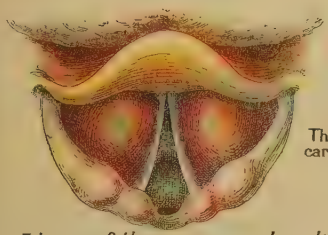


Acute laryngitis



ANTERO-POSTERIOR SECTION OF NORMAL LARYNX (RIGHT SIDE.)

Tuberculous infiltration of the larynx

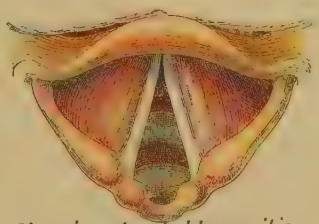


Edema of the upper vocal cords

Syphilitic laryngitis
(Mucous patches)

Granular laryngitis

Syphilitic laryngitis
(Gumma of the left lower vocal cord)



Chronic catarrhal laryngitis
(With tumefaction of the upper vocal cord)

Nodule of the vocal cords

Tumors of the larynx
(Papillomata)

Acute stridulous laryngitis

Larynx and diseases of the larynx.

PART 9

THROAT DISEASES

Abductor Paralysis.—L. *ab*, from + *du'cere*, to draw; Gr. παρά beside + λύειν to loosen. See Aphonia.

Abscess, Lingual.—L. *absces'sus*, a going apart. See Lingual Tonsillitis, Acute.

Peritonsillar.—See Peritonsillar Abscess; Quinsy.

Retropharyngeal.—See Retropharyngeal Abscess.

Adductor Paralysis.—L. *ad*, to + *du'cere*, to draw; Gr. παρά beside + λύειν to loosen. See Aphonia.

Spasm, Rhythmical Clonic.—L. *adduc'ere*, to draw toward; Gr. σπασμός; ῥυθμός; κλόνος turmoil. See Neuroses of the Larynx.

Tonic.—L. *to'nus;* Gr. τόνος tone. See Laryngismus Stridulus.

Adenitis, Retropharyngeal, Suppurative.—Gr. ἀδήν gland + -ιτις inflammation; L. *sub*, under + *pus, puris*, pus. See Retropharyngeal Abscess.

Adenoids.—Gr. ἀδήν gland + εἶδος form. Adenoids are better felt with the finger (with the patient supine and the head retracted) than seen (with the aid of the post-rhinoscopic mirror, and retraction of the soft palate, or by direct inspection through the nose). The presence of enlarged tonsils in children always indicates the presence of adenoids. The latter tend to atrophy as puberty approaches, but they are often found in adults. The following symptoms and sequelæ occur, viz., nasal obstruction and mouth breathing, collapse of the alæ nasi and narrowness of the nasal passages, septal deviation, turgescent and hypertrophic rhinitis, postnasal catarrh, eustachian catarrh, otitis media, deafness, arched palate and crowded teeth, snoring, "dead voice," gingival, dental, pharyngeal, laryngeal, bronchial, pulmonary, and gastric infection, deformity of the chest walls, vomiting, laryngismus stridulus, convulsions, night-terrors, night-sweats, peevishness, enuresis, reflex cough, facial twitching, stammering, stuttering, asthma, hay-fever, emphysema, chorea, epilepsy, anæmia, cyanosis, false croup, epistaxis, discharging or dry nose, ocular inflammation, enlarged cervical glands, glandular fever, headache, physical and mental backwardness, lack of concentration of attention (aprosexia, from Gr. *a* priv. + προσέχειν to heed), etc.

Treatment.—The growths should be removed under ether anæsthesia by means of various sizes and curves of the Gottstein curette, preceded, if need be, by the finger. Dangerous bleeding is very rare; nevertheless one had better have at hand hydrogen peroxide, full strength, and adrenalin solution, 1 : 1000, one or two drams of either being injected, if need be, into the naso-pharynx through the nostrils. If these fail to check the hemorrhage, the posterior nares and rhinopharynx may be plugged.

If mouth breathing at night persists after the adenoids have been removed, apply a chin strap. Increase the chest capacity by breathing exercises. Less than two per cent. of cases show recurrence after removal.

Adenoma.—Gr. ἀδήν gland + -ωμα tumor. See Tumors of the Naso-Pharynx and Pharynx, and Tumors of the Larynx.

Air Passages, Foreign Bodies in the.—See Foreign Bodies in the Air Passages.

Amyloid Tumor of the Larynx.—Gr. ἄμυλον starch + εἶδος form. See Tumors of the Larynx.

Anæsthesia of the Larynx.—Gr. ἀν not + αἴσθησις sensation. See Neuroses of the Larynx.

of the Pharynx.—See Neuroses of the Pharynx.

Angina, Ludwig's.—L. *an'gina*, anguish. See Ludwig's Angina in Part 1.

Membranous.—L. *membrana*, membrane. See Tonsillitis Acuta.

Vincent's.—See Part 1.

Angioma.—Gr. ἀγγεῖον vessel + -ωμα tumor. See Tumors of the Naso-Pharynx and Pharynx, and Tumors of the Larynx.

Angioneurotic Œdema.—Consult Part 1, on General Medicine and Surgery.

Aphonia.—Gr. *a* priv. + φωνή voice. Aphonia, or loss of voice, may be myopathic (myo-paretic), neuropathic (neuro-paralytic) or psychopathic (hysterical).

I. Bilateral Adductor Paralysis or Paresis.—This form of paralysis of the vocal cords is marked by incomplete closure of the glottis on attempted phonation. It is usually hysterical in origin, but may be myopathic and due to laryngitis, incipient tuberculosis, syphilis, typhoid and typhus fevers, cholera, diphtheria, gout or rheumatism, local neoplasms, anæmia, general debility, overuse or misuse of the voice, phosphorus, copper, arsenic, or lead poisoning.

Hysterical aphonia is a bilateral adductor paralysis of sudden onset and as sudden termination, and is probably chiefly due to some emotional disturbance, viz., shock, grief, worry, anger, chagrin, fright, joy, etc., which causes a temporary dissociation of the adductor nervous mechanism from the cerebral volitional centres. Laryngeal examination reveals incomplete closure of the glottis on attempted phonation, but closure on coughing, which is diagnostic. Moreover, paralysis of the adductors alone is always functional. Organic paralysis affects first the abductors and then the adductors.

For the treatment of hysterical aphonia and hysteria in general, consult Part 1, on General Medicine and Surgery.

II. Paralysis of the Superior Laryngeal Nerves.—These nerves supply the crico-thyroid muscles, whose function is to assist in rendering tense the vocal cords during phonation. The effect of this paralysis is shown in the accompanying pictures (Figs. 107, 108, 109.).

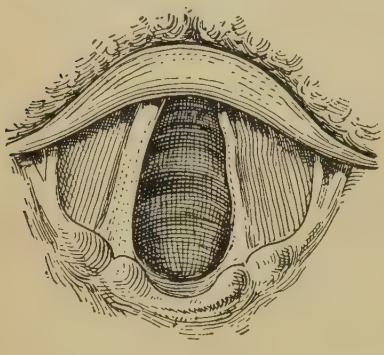


Fig. 107

Paralysis of crico-thyroid muscle on left side, as seen during respiration.

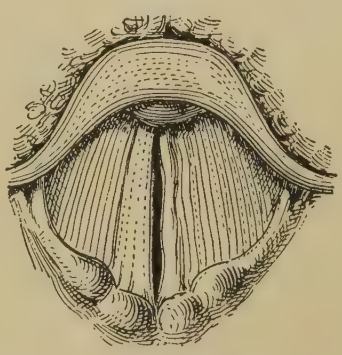


Fig. 108

Paralysis of crico-thyroid muscle on left side, as seen during phonation.

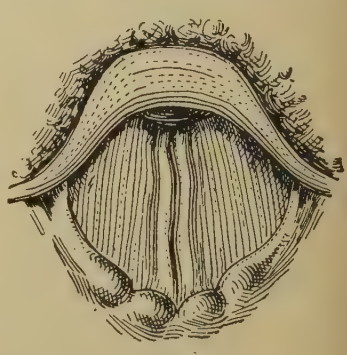


Fig. 109

Paralysis of crico-thyroid muscle; appearance of bilateral paralysis as seen during phonation.

Anæsthesia of the larynx may co-exist, resulting in the danger of food entering the lungs.

The causes of this extremely rare form of paralysis are as follows: Injury or section of the nerve; "cold"; overuse of an inflamed larynx; involvement of the nerve in a new-growth or enlarged gland; and diphtheria.

The Prognosis is usually good. Recovery occurs in from one to three months in diphtheritic cases; sometimes a year in traumatic cases.

The Treatment embraces local counter-irritation by means of iodine or mustard plasters, massage, galvanism or faradism for five to ten minutes daily, strychnine in full dosage (see Part 11), and rest of the voice. Where laryngeal anæsthesia is present, it may be necessary to feed the patient through a stomach tube (see Part 1, under Dyspepsia, for the technique).

III. Paralysis of the Recurrent Laryngeal Nerves—These nerves supply all the muscles of the larynx except the crico-thyroid. Their paralysis (which is the commonest form of laryngeal paralysis met with) results in palsy first of the abductors, and finally the adductors.

Paralysis of the adductors alone is always functional and not organic. One should bear in mind that inflammatory infiltration of the abductor muscles, due to cancer, tuberculosis, syphilis, or traumatism, and also ankylosis of the crico-arytenoid articulation both produce a resemblance to true paralysis.

The causes of recurrent laryngeal paralysis are as follows: Pressure on the vagus or recurrent laryngeal nerve from aneurysm, goitre, pericardial effusion, pleural thickening at the apex of the lung, dilated left auricle, pneumonoconiosis, large pleural effusions, cancer of the pleura with effusion, enlarged bronchial glands, cancer of the œsophagus, mediastinal tumors, inflammatory or neoplastic, cervical growths or phlegmon; traumatism; bulbar lesions: hemorrhage, thrombosis, embolism, disseminated sclerosis, tabes, general paresis, syphilis, glosso-labio-laryngeal paralysis, aneurysm, tumors, abscess, amyotrophic lateral sclerosis, syringomyelia, diphtheria; peripheral neuritis, due to exposure to cold winds, infectious diseases (typhoid and typhus fevers, rheumatic fever, influenza, diphtheria, pneumonia, puerperal infection, erysipelas, scarlet fever, measles, gonorrhœa), lead, arsenic, potassium iodide, iodoform, antimony, copper, potassium cyanide, phosphorus, alcohol, morphine, atropine, cannabis indica, cocaine.

The treatment is that of the cause. A bilateral abductor paralysis may at any time be complicated by a sudden fatal dyspnœa, therefore it is advisable to do a precautionary tracheotomy (*q.v.* in Part 1) in these cases.

IV. Paralysis of the Arytænoidæus Muscle.—This rare paralysis, Fig. 110, may occur in hysteria, neurasthenia, and in myopathic conditions, *e.g.*, laryngitis, etc. (see under Bilateral Adductor Paralysis).

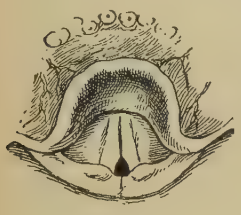


Fig. 110
Paralysis of the Arytænoidæus muscle

The treatment embraces removal of the cause, vocal rest, daily local galvanism or faradism for five to ten minutes, strychnine in full dosage, tonics, good hygiene, fresh air day and night, and nourishing food.

V. Paralysis of the Internal Tensors, the Thyro-arytenoidei Interni and Externi.—This rare paralysis (Fig. 111) is due to hysteria, neurasthenia, laryngitis, overuse or misuse of the voice, anæmia, general debility, local neoplasms, incipient tuberculosis, diphtheria, recurrent laryngeal paralysis, etc.

Fig. 111
Paralysis of the Internal tensors.

The treatment embraces removal of the cause, vocal rest, daily local galvanism or faradism for five to ten minutes, strychnine in full dosage, tonics, good hygiene, fresh air day and night, and nutritious food.

Arytænoidæus Paralysis.—Gr. *ἀρύταινα* jug or pitcher + *εἶδος* form. See Aphonia.

Atrophic Laryngitis.—Gr. *a* neg. + *τροφή* nourishment; *λάρυγξ* larynx + *-ιτις* inflammation. **Synonyms.**—Laryngitis sicca; dry laryngitis.

A chronic inflammatory affection of the laryngeal mucous membrane, secondary to rhinal suppuration, *e.g.*, suppurative sinusitis, ozœna, syphilis, tuberculosis, and adenoids, and characterized by atrophy and the presence of crusts, with resulting hoarseness, painful phonation, hawking and coughing, relieved by the expulsion of the crusts.

The prognosis depends upon the ability to remove the cause.

Treatment.—Remove the cause. Prescribe, as glandular stimulants or alteratives, potassium iodide, gr. v–x, t.i.d. (see Drugs, Part 11); or ℞ iodi, gr. $\frac{1}{8}$, phosphori, gr. $\frac{1}{100}$, bromini, gr. $\frac{1}{8}$, vini xerici, ʒi, well diluted, t.i.d. (Kyle); or terpin hydrate, gr. iii–v, three or four times daily; or ammonium chloride and cubebs; or granular effervescent sodium phosphate, one tablespoonful morning and night; or lozenges of ammonium chloride or carbolic acid (gr. $\frac{1}{4}$, with menthol, gr. $\frac{1}{20}$), made with "glycogelatine" or "fruit paste" as a base. Spray or syringe out the larynx frequently with a cleansing alkaline lotion, viz., ℞ Sodii bicarbonatis, sodii biboratis, sodii chloridi, sacchari albi, aa gr. v, with or without acidi carbolici, gr. i, in aquam ʒiii–iv; or hydrogen dioxide and Dobell's solution, aa, followed by a spray of albolene, benzoinol, cosmoline, paroline, liquid vaseline, or olive oil, containing menthol, gr. v ad ʒi; or thymol, gr. i, menthol, gr x, and eucalyptol, ♏i, ad ʒi (Thomson); or ol. santali, gtt. vi ad ʒi. The larynx is syringed under good illumination, with the patient holding his own tongue. He is instructed to take a long breath and then say a prolonged E, during which the fluid is injected against the vocal cords. At the conclusion of the treatment the patient should close his mouth and take deep breaths through the nose, in order to avoid laryngeal spasm.

Richardson does not advocate the use of mentholated oily solutions. He first removes all crusts and scabs by means of an antiseptic, alkaline spray, aided if necessary by medicated steam inhalations, viz., zinc sulpho-carbolate, gr. v, or carbolic acid, gr. i–iii, or compound tincture of benzoin, ʒi, and chloroform, gtt. x, in a pint of boiling water over an alcohol lamp. He then applies on a cotton swab, as a local stimulant, zinc chloride or silver nitrate, 1 to 3 per cent. aqueous solution. The excess of fluid is removed from the cotton and the application is made quickly, just at the end of a full inspiration. Mandl's solution may also be used. ℞ Iodi puri, gr. vi, potassii iodidi, gr. xx, Olei menthæ piperitæ, ♏v, glycerini, ʒi. The benzoin and chloroform inhalations and a spray of antipyrine solution, 2 per cent., are useful for the relief of irritation.

It is advised by Kyle that crude petroleum be rubbed in externally at night, and the larynx then covered with a saturated flannel cloth to be worn all night.

The observance of correct hygiene is essential. This embraces adequate rest and exercise, regular hours of eating and sleeping, rest before and after meals, adequate clothing, fresh air day and night, a daily morning warm bath before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regulation of the bowels, wholesome food,

and the avoidance of dust, tobacco, and alcohol. Tonics may be indicated, *e.g.*, iron, arsenic, hypophosphites, codliver oil (see Part 11). A warm, moist climate is desirable (see also Atrophic Rhinitis, in Part 8, Nose Diseases).

Atrophic Naso-Pharyngitis and Pharyngitis.—Gr. *a* neg. + *τροφή* nourishment; L. *na'sus*, nose; Gr. *φάρυγξ* pharynx + *-ιτις* inflammation. **Synonym.**—Pharyngitis sicca; dry pharyngitis.

A chronic inflammatory affection of the pharyngeal mucosa, characterized anatomically by atrophy and resulting increased capaciousness of the pharynx, and clinically by dryness of the throat and the eventual appearance of dried mucous scabs.

Etiology.—Chronic catarrhal or hypertrophic pharyngitis; atrophic rhinitis; suppurative sinusitis; syphilis; tuberculosis; adenoids; mouth-breathing; a too complete turbinotomy; irritating inhalations; cyanotic congestion secondary to cardiac, hepatic, renal, or pulmonary disease; diabetes mellitus; chronic nephritis; gastro-intestinal disorders; senility; anæmia.

Prognosis.—This depends upon the remediability of the cause and the extent of fibrous contraction present. A year's treatment of the pharyngeal condition may be required after the cause is removed.

Treatment.—Attend first to the correction of the cause. Every day or every other day, or as often as required, remove the dried secretions by swabbing with equal parts of hydrogen peroxide and cinnamon or peppermint water, or by means of steam medicated with creosote (about 10 to 15 drops of creosote to one pint of boiling water over an alcohol lamp), or by means of boroglycerine applied with a brush. Following the removal of the crusts, and also two or three times a day, spray or syringe the pharynx and nasopharynx (using a post-nasal syringe for the latter), with a hot alkaline wash:

℞ Sodii bicarbonatis,
Sodii biboratis,
Sodii chloratis,
Potassii bicarbonatis, aa..... gr. xv
Aquæ..... ʒii.
(Kyle.)

Then dry the surface with pledgets of absorbent cotton, and apply one of the following mildly stimulating lotions, viz., (1) lanolin and ichthyol, aa; (2) refined or crude petroleum (Kyle); (3) oil of mustard, gtt. ss–i, or oil of cassia, gtt. ii, ad albolene or liquid vaseline, ʒi (Kyle); (4) silver nitrate, gr. v–xv ad ʒi; (5) spray of paroline, cosmoline, albolene, benzoinol, or liquid vaseline, alone or containing ol. gaultheriæ, gtt. i, and menthol, gr. v–x, ad ʒi, or ol. cassiæ and ol. santali, aa gtt. vi ad ʒi; (6) iodi puri, gr. vi, potassii iodidi, gr. xx, ol. menth. pip., ℥v, glycerini, ʒi.

Massage of the mucous membrane, accomplished by rubbing with cotton or a sponge, is beneficial.

The administration of potassium iodide in small doses (see Part 11), may be of occasional service for the purpose of loosening crusts; as may also Kyle's "tonic alterative":

℞ Phosphori..... gr. 1/100
Iodi puri..... gr. 1/8–1/6
Bromini..... gr. 1/8–1/6
Vini xerici ..... ʒi

M. Sig.—One dram in one-quarter glass of water, t.i.d.p.c. (Kyle.)

The observance of correct hygiene is of importance. This embraces adequate rest and exercise, regular hours of eating and sleeping, rest before and after meals, adequate clothing, fresh air day and night, a daily morning warm bath, before breakfast, in a comfortable room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regulation of the bowels, wholesome food, and the avoidance of dust, tobacco, and alcohol. Tonics may be indicated, *e.g.*, iron, arsenic, strychnine, sodium phosphate, ʒii–iv, two or three times daily, stomachic bitters (see also Atrophic Rhinitis, in Part 8, Nose Diseases).

Atrophic Pharyngitis.—See Atrophic Naso-Pharyngitis and Pharyngitis.

Bodies, Foreign.—See Foreign Bodies.

Breath, Holding the.—See Laryngismus Stridulus.

Bronchi, Foreign Bodies in the.—Gr. *βρόγχος* bronchus. See Foreign Bodies in the Air Passages.

Bulbar Paralysis.—Consult Part 1, on General Medicine and Surgery.

Cancer of the Larynx.—L. *cancer;* Gr. *καρκίνος* crab. See under Tumors of the Larynx.

Naso-Pharynx.—See Tumors of the Naso-Pharynx and Pharynx.

Œsophagus.—See Part 1.

Pharynx.—See Tumors of the Naso-Pharynx and Pharynx.

Catarrh, Laryngeal.—L. *cata'rrhus*, from Gr. *καταῤῥεῖν* to flow down. See Laryngitis.

Naso-Pharyngeal.—See Naso-Pharyngitis.

Pharyngeal.—See Pharyngitis.

Post-Nasal.—See Naso-Pharyngitis.

Tonsillar.—See Tonsillitis.

Cellulitis, Cervical.—L. *cel'lula*, minute cell; *cer'vix*, neck; Gr. *-ιτις* inflammation. See Ludwig's Angina, in Part 1.

Submaxillary.—L. *sub*, under + *maxil'la* jaw. See Ludwig's Angina, in Part 1.

Child-Crowing.—See Laryngismus Stridulus,.

Chondritis and Perichondritis of the Larynx.—Gr. *χόνδρος* cartilage; *περί* around; *-ιτις* inflammation. An acute or subacute inflammation of the perichondrium of the thyroid and cricoid cartilages, of grave import, leading usually to abscess formation, and necrosis and exfoliation of the cartilage.

Etiology.—Syphilis; tuberculosis; carcinoma, traumatism; foreign bodies in the œsophagus or larynx; neighboring sepsis; overuse of an inflamed larynx; "pressure of the plates of the cricoid against the vertebræ in bed-ridden patients" (bed-sore); gout or rheumatism; exposure to cold and damp; typhoid fever, typhus fever, smallpox, diphtheria; actinomycosis; glanders.

Treatment.—In acute cases, apply the ice-bag and give the patient ice to suck. Blood may be extracted by means of the artificial leech. For œdema of the glottis, employ a spray of cocaine, 2 per cent., in adrenalin, 1 : 1000; but perform tracheotomy (*q.v.* in Part 1) at once should suffocation threaten. As soon as suppuration is evident, apply external heat and incise the abscess freely either from within or without the larynx. An internal incision is made with a laryngeal lancet under cocaine anæsthesia, with the patient in a sitting posture. The cocaine, 10 to 20 per cent. solution, is applied repeatedly with Sajous's forceps. When operating from without, curette away granulations and softened cartilage, and remove necrosed cartilage. It is advised that lactic acid, 50 to 75 per cent., be then rubbed in every second or third day. Later, laryngeal bougies, intubation tubes or tracheal tubes may be required to overcome strictures.

The cause of the trouble, must, of course, be considered. A foreign body must be removed (see Foreign Bodies in the Air Passages, and in the Œsophagus). The treatment of tuberculosis and cancer can only be palliative; tracheotomy, when required, should be done as low down as possible. Syphilis calls for vigorous specific treatment (see Syphilis, in Part 1, on General Medicine and Surgery). Indeed, potassium iodide (Part 11) should be tried in all doubtful cases.

Chondroma of the Larynx.—Gr. *χόνδρος* cartilage + *-ωμα* tumor. See Tumors of the Larynx.

Choreic Movements of the Larynx.—L.; Gr. *χορεία* dance. See under Neuroses of the Larynx.

Clergyman's Sore Throat.—See Pharyngitis, Chronic Hypertrophic.

Clonic, Rhythmical Spasm of the Adductors.—Gr. *κλόνος* turmoil; *ῥυθμός*; *σπασμός*; L. *adduc'ere*, to draw toward. See Neuroses of the Larynx.

Constrictors of the Pharynx, Paralysis of the.—L. *con*, together + *string'ere*, to draw. See Neuroses of the Pharynx.

Cords, Vocal, Paralysis of the.—Gr. *χορδή* cord; L. *vocal'is*, from *vox*, voice; Gr. *παρά* beside + *λύειν* to loosen. See Aphonia.

Spasm of the.—Gr. *σπασμός*. See Neuroses of the Larynx, and Laryngismus Stridulus.

Cough and Cry, Nervous Laryngeal.—See Neuroses of the Larynx.

Croup, False.—See Laryngitis Acuta in Children, and Laryngismus Stridulus.

Membranous.—See Diphtheria, in Part 1.

Non-Membranous.—See Laryngitis Acuta in Children.

Spasmodic.—See Laryngitis Acuta in Children, and Laryngismus Stridulus.

Cry, Nervous Laryngeal.—See Neuroses of the Larynx.

Cystoma of the Larynx.—Gr. *κύστις* cyst + *-ωμα* tumor. See Tumors of the Larynx.

Cysts of the Nasopharynx and Pharynx.—See under Tumors of the Naso-Pharynx and Pharynx.

Defects of Speech.—See Speech Defects.

Dermoid Cyst of the Throat.—Gr. *δέρμα* skin + *εἶδος* form; *κύστις* bladder. See Tumors of the Naso-Pharynx and Pharynx.

Diathermy.—See Part 1, General Medicine and Surgery.

Dilatation of the Œsophagus.—See Part 1.

Diphtheria.—See Part 1.

Diverticulum of the Pharynx.—See Œsophageal Diverticula in Part I.

Œsophagus.—See Part I.

Dry Laryngitis.—See Atrophic Laryngitis.

Pharyngitis.—See Atrophic Naso-Pharyngitis and Pharyngitis.

Dysphagia.—See Part 1.

Dysphonia Spastica.—Gr. *δυς* ill + *φωνή* voice; *σπασμός* spasm. See under Neuroses of the Larynx.

Edema.—See Œdema.

Elongation of the Uvula.—L. *uv'ula*, little grape. The condition does not

require treatment unless it is productive of symptoms, *e.g.*, sensation of a foreign body, constant hawking, nausea and vomiting, alteration of voice, laryngeal spasm, paroxysmal cough.

Causes. — Congenital anomaly; chronic inflammation; naso-pharyngitis; anæmia; diphtheritic paralysis; improper use of the voice; etc.

Treatment.—Attend to the cause. Treat any existing anæmia, gastro-intestinal disorder, or local inflammation. Paint the enlarged uvula every second or third day with silver nitrate, 5 to 10 per cent., or chromic acid, 10 to 20 per cent. Lozenges of krameria may also be useful.

If the above measures fail, resort to uvulotomy. Under the anæsthetic and hæmostatic action of a 10 per cent. solution of cocaine in 1 : 1000 adrenalin, seize the tip of the uvula with forceps, without exerting traction, and amputate a portion of it, never the whole uvula, with scissors, in such a way that the cut surface is oblique and directed posteriorly, viz., . If too much of the uvula is severed, severe hemorrhage may ensue. Prescribe cold, bland, soft food, cracked ice, and a carbolic lozenge (ac. carb., gr. ¼ ol. cinnamomi, ♏ ½0, with "glycogelatine" or "fruit paste" as a basis—Thomson) until healing occurs. If required, the throat may be syringed with warm alkaline lotions, as given under Tonsillitis Acuta.

Enlarged Faucial Tonsils.—See Tonsillitis, Chronic Lacunar, and Tonsillectomy.

Lingual Tonsil.—See Hyperplasia of the Lingual Tonsil.

Epithelioma of the Larynx.—Gr. ἐπί on + θηλή nipple + -ωμα tumor. See Tumors of the Larynx.

Erythematous Tonsillitis.—L.; Gr. ἐρύθημα redness. See Tonsillitis Acuta.

Esophageal Affections.—See Œsophageal Affections.

False Croup.—See Laryngitis Acuta in Children, and Laryngismus Stridulus.

Fibroma.—L. *fib'ra*, fibre + Gr. -ωμα tumor. See Tumors of the Naso-Pharynx and Pharynx, and of the Larynx.

Follicular Pharyngitis.—L. *follic'ulus*, little bag. See under Pharyngitis Catarrhalis Chronica.

Tonsillitis.—See Tonsillitis Acuta.

Foreign Bodies in the Air Passages.—If the symptoms are urgent, invert the patient, and at the same time rapidly explore the pharyngo-larynx with the finger. If this is not immediately successful, do a tracheotomy (*q.v.*) at once, and attempt to remove the body, if in the larynx, with curved laryngeal forceps, under good illumination. Should this fail, try to push the body up through the glottis or draw it down through the tracheotomy wound. If the foreign body is below the tracheotomy wound, it is usually expelled as soon as the severed tracheal rings are retracted; if it is not expelled, titillate the tracheal mucous membrane to induce coughing, or invert the patient and slap the back smartly; if this fails, search with a probe or with cystoscopic forceps through a cystoscope, or with forceps guided by the fluoroscopic shadow of the foreign body, or best, if available, a tracheo-bronchoscope.

If the symptoms are not urgent, examine carefully, under good illumination and cocaine anæsthesia, the post-nasal space, pharynx, tonsils, base of the tongue, and pharyngolarynx; the finger or a probe may also be used. Suspension laryngoscopy (in which the patient is suspended head down by means of a special apparatus) is a new method of inspection introduced by Killian and perfected by Lynch. In children a general anæsthetic is necessary. The X-ray is invaluable for the location of metallic bodies. It may be necessary, in view of the danger of sudden and fatal laryngeal spasm, to do a tracheotomy before attempting to remove through the mouth an impacted body in the larynx.

Killian's direct method, by means of Killian's tubes, with perhaps Brüning's modifications, is the ideal method for the removal of bodies from the trachea and bronchi. When this method is not available, perform tracheotomy, and if titillation of the tracheal mucous membrane, coughing, inversion and succussion are of no avail, one may search for the body under cocaine anæsthesia, with the aid, if practicable, of an X-ray screen. It should be borne in mind that immediate removal of the foreign body is very rarely necessary; therefore, one should take the time and pains to secure the most skilful service obtainable (Consult Chevalier Jackson on bronchoscopy in Musser and Kelly's *Practical Treatment*, Vol. III, page 216, et seq.; and the *Journal of the American Medical Association*, January 27, 1917).

Thoracotomy is to be considered only in abscess formation, after bronchoscopy has failed

Foreign Bodies in the Bronchi.—Gr. βρόγχος bronchus. See Foreign Bodies in the Air Passages.

Larynx.—Gr. λάρυγξ larynx. See Foreign Bodies in the Air Passages.

Foreign Bodies in the Naso-Pharynx.—L. *nas'us*, nose; Gr. *φάρυγξ* pharynx. See Foreign Bodies in the Air Passages.

Foreign Bodies in the Œsophagus.—Killian's direct œsophagostomy is the ideal method. The application of adrenalin to reduce local swelling is helpful. If œsophagostomy is not available, employ the umbrella probang for fish-bones and other small bodies, the coin-catcher for coins and small bodies, or forceps guided by an X-ray screen, or if the body is soft, an œsophageal bougie to push it into the stomach. Morphine may be administered to relax the œsophageal musculature.

The drinking of strong brandy may cause some foreign bodies to shrink. Dilute hydrochloric acid and pepsin or papain (consult Part 11) are also employed in suitable cases for the purpose of artificial digestion.

Œsophagotomy or gastrotomy is performed only as a last resort, or in cases of perforation or severe hemorrhage.

Foreign Bodies in the Pharynx.—Gr. *φάρυγξ*. See Foreign Bodies in the Air Passages.

Trachea.—Gr. *τραχεῖα*. See Foreign Bodies in the Air Passages.

Fracture of the Hyoid Bone.—See Part 10.

Larynx.—See Part 10.

Trachea.—See Part 10.

Fungus Disease of the Throat.—L. See Pharyngomycosis.

Gangosa; Rhinopharyngitis Mutilans.—See Rhinopharyngitis Mutilans.

Glosso-Labio-Laryngeal Paralysis.—Gr. *γλῶσσα* tongue; L. *lab'ium*, lip; Gr. *λάρυγξ* larynx; *παρά* beside + *λύειν* to loosen. See Part 1.

Glottis, Congenital Stenosis of the.—Gr. *γλωττίς*; L. *congen'itus*, born together; Gr. *στένοσις*. See Obstruction of the Larynx.

Œdema of the.—See Œdema of the Larynx.

Spasm of the.—Gr. *σπασμός*. See Laryngismus Stridulus.

Stenosis, Congenital of the.—Gr. *στένοσις*; L. *congen'itus*, born together. See Obstruction of the Larynx.

Granular Pharyngitis.—L. *gran'ulum* grain. See Pharyngitis Catarrhalis Chronica.

Hæmatoma, Laryngeal Submucous.—Gr. *αἷμα* blood + *-ωμα* tumor. See Submucous Laryngeal Hemorrhage.

Hemorrhage, Laryngeal Submucous.—See Submucous Laryngeal Hemorrhage.

Herpes of the Throat.—L.; Gr. *ἕρπης* creeping. An acute, usually unilateral, febrile affection of about eight to sixteen days duration, characterized by an itching, burning eruption of vesicles, which rapidly rupture to form ulcers that soon become covered with a membranous exudate. A tendency to recurrence is manifested. Physical and mental debility are causal factors.

Treatment.—Open the bowels, and prescribe a tonic, such as Fowler's solution (see Part 11 for all drugs), or elixir ferri, quininæ, et strychninæ phosphati. Codliver oil may be indicated. For the neuralgic pains prescribe aspirin, phenacetin, or antipyrine. Each ulcer may be touched with a pencil of silver nitrate. As a local sedative, the following may be applied once daily on a cotton-wound probe:

℞	Mentholis	gr. v
	Cocainæ	gr. v
	Acidi carbolici	♏xv
	Petrolati mollis	℥i

The following may be prescribed as a gargle:

℞	Thymolis	gr. iv
	Mentholis	℥i
	Acidi borici	℥i
	Aquæ	℥iv

M. Sig.—Mix with an equal amount of water as a gargle.

Holding-the-Breath.—See Laryngismus Stridulus.

Hyoid Bone Fracture.—See Fracture of the Hyoid Bone in Part 10.

Hyperæsthesia of the Larynx.—Gr. *ὑπέρ* over + *αἴσθησις* sensibility. See Neuroses of the Larynx.

Hyperæsthesia of the Pharynx.—See Neuroses of the Pharynx.

Hyperkeratosis of the Tonsils and Pharynx.—See Keratosis Pharyngis.

Hyperplasia of the Lingual Tonsil.—Gr. *ὑπέρ* over + *πλάσις* formation; L. *lin'gua* tongue; *tonsil'la*, tonsil. The mouth and teeth should be kept clean, the diet should be plain, bland, and moderate, constipation should be corrected, and alcohol and tobacco strictly avoided. If symptoms of irritation are troublesome, the enlargement may be reduced by means of caustics applied on a corrugated, cotton-wound applicator, every fourth day, *e.g.*, chromic acid, 20 per cent.; zinc chloride, 3 per cent.; dilute hydrochloric acid. All excess of caustic fluid should be expressed from the applicator before making the application. This is very essential. The galvanocautery may also be used at a dull red heat, five or six punctures (not deep) being made at each sitting, at weekly intervals. One may cut away the enlarged gland with Kirkpatrick's scissors, punch forceps, or a lingual tonsillotome, taking care not to injure the epiglottis.

Hypertrophic Laryngitis.—Gr. *ὑπέρ* over + *τροφή* nutrition. See Laryngitis, Chronic Catarrhal.

Pharyngitis.—See Pharyngitis Catarrhalis Chronica.

Hypertrophied Tonsils.—See Tonsillitis, Chronic Lacunar, and Tonsillectomy.

Hysterical Aphonia.—Gr. *ὑστέρα* womb. See Aphonia.

Infants, Congenital Laryngeal Stridor in.—L. *in'fans; congen'itus*, born together; *stri'dor*. See Obstruction of the Larynx.

Influenza.—See Part 1, General Medicine and Surgery.

Intubation.—L. *in*, into + *tu'ba*, tube. See under Diphtheria in Part 1.

Keratosis Pharyngis.—Gr. *κέρας* horn; *φάρυγξ* pharynx. **Synonym.**—Hyperkeratosis of the tonsils and pharynx.

A chronic affection of the tonsils and pharynx of variable duration (weeks to years), occurring mostly in young adults, and characterized by the presence of "discrete horny outgrowths of cornified epithelial cells."

Treatment.—If irritation is complained of, destroy three or four of the horny masses each week with the electro-cautery, including a margin of healthy tissue.

Since the affection seems to occur commonly in those who are physically or mentally depressed, the patient should be enjoined to observe the rules of hygiene, which embrace mental and physical relaxation, fresh air day and night, nutritious food, rest before and after meals, regular hours of eating and sleeping, frequent bathing followed by the cold spinal douche, regulation of the bowels, and, if indicated, tonics, *i.e.*, stomachic bitters, strychnine or nux vomica, iron, arsenic, etc. (See Drugs, Part 11).

Keratosis Tonsillæ.—L. *tonsil'la*, tonsil. See Keratosis Pharyngis, above.

Lacunar Tonsillitis, Acute.—L. *lacu'na*, a small pit. See Tonsillitis Acuta.

Chronic.—See Tonsillitis, Chronic Lacunar.

Laryngeal Adenoma.—Gr. *λάρυγξ* larynx; *ἀδήν* gland + *-ωμα* tumor. See Tumors of the Larynx.

Amyloid Tumor.—Gr. *ἄμυλον* starch + *εἶδος* form. See Tumors of the Larynx.

Anæsthesia.—Gr. *ἀν* not + *αἴσθησις* sensation. See Neuroses of the Larynx.

Angioma.—Gr. *ἀγγεῖον* vessel + *-ωμα* tumor. See Tumors of the Larynx.

Cancer.—L. *can'cer;* Gr. *καρκίνος* crab. See Tumors of the Larynx.

Chondritis and Perichondritis.—See Chondritis and Perichondritis of the Larynx.

Laryngeal Chondroma.—Gr. *χόνδρος* cartilage + *-ωμα* tumor. See Tumors of the Larynx.

Choreic Movements.—L.; Gr. *χορεία* dance. See Neuroses of the Larynx.

Clonic Spasm.—Gr. *κλόνος* turmoil; *σπασμός* spasm. See Neuroses of the Larynx.

Cough, Nervous.—See Neuroses of the Larynx.

Cry, Nervous.—See Neuroses of the Larynx.

Cystoma.—Gr. *κύστις* cyst + *-ωμα* tumor. See Tumors of the Larynx.

Edema. See Œdema of the Larynx.

Epithelioma.—Gr. *ἐπί* on + *θηλή* nipple + *-ωμα* tumor. See Tumors of the Larynx.

Fibroma.—L. *fib'ra*, fiber + Gr. *-ωμα* tumor. See Tumors of the Larynx.

Foreign Bodies.—See Foreign Bodies in the Air Passages.

Fracture.—See Fracture of the Larynx in Part 10.

Hemorrhage, Submucous.—See Submucous Laryngeal Hemorrhage.

Hyperæsthesia.—Gr. *ὑρέρ* over + *αἰσθησις* sensibility. See Neuroses of the Larynx.

Hypertrophy.—Gr. *ὑρέρ* over + *τροφή* nutrition. See Laryngitis, Chronic Catarrhal.

Inflammation.—L. *inflammar'e*, to set on fire. See Laryngitis.

Lipoma.—Gr. *λίπος* fat + *ωμα* tumor. See Tumors of the Larynx.

Lupus.—See Lupus of the Nose and Throat.

Lymphoma.—L. *lympha*, lymph + Gr. *-ωμα* tumor. See Tumors of the Larynx.

Myxoma.—Gr. *μύξος* mucus + *-ωμα* tumor. See Tumors of the Larynx.

Neuroses.—See Neuroses of the Larynx.

Obstruction.—L. *obstruc'tio*. See Obstruction of the Larynx.

Œdema.—See Œdema of the Larynx.

Osteoma.—Gr. *ὀστέον* bone + *-ωμα* tumor. See Tumors of the Larynx.

Pachydermia.—Gr. *παχύς* thick + *δέρμα* skin. See Laryngitis, Chronic Catarrhal.

Papilloma.—L. *papil'la*, nipple + Gr. *-ωμα* tumor. See Tumors of the Larynx.

Paræsthesia.—Gr. *παρά* beside + *αἴσθησις* sensation. See Neuroses of the Larynx.

Paralyses.—Gr. *παρά* beside + *λύειν* to loosen. See Aphonia.

Laryngeal Perichondritis.—See Chondritis and Perichondritis of the Larynx.

Sarcoma.—Gr. *σάρξ, σαρκός* flesh + *-ωμα* tumor. See Tumors of the Larynx.

Spasm, Clonic.—Gr. *κλόνος* turmoil; *σπασμός* spasm. See Neuroses of the Larynx.

Tonic.—L. *to'nus* Gr. *τόνος* tone. See Laryngismus Stridulus.

Stenosis.—Gr. *στένοσις* narrowing. See Obstruction of the Larynx.

Submucous Hemorrhage.—See Submucous Laryngeal Hemorrhage.

Thyroid Gland Tumor.—Gr. *θυρεός* shield + *εἶδος* form; L. *glans*, a cord. See Tumors of the Larynx.

Tuberculosis.—See Tuberculosis of the Larynx.

Tumors.—See Tumors of the Larynx.

Laryngismus Stridulus.—L.; Gr. *λαρυγγισμός* a whooping; L. *strid'ulus*, attended with stridor. Synonyms.—Spasm of the glottis; spasmodic croup; spasmodic laryngitis; false croup; child-crowing; holding-the-breath.

A relatively rare, chronic affection, lasting from several days to several weeks or months, occurring usually in young children of a feeble constitution, *i.e.*, in children affected with rickets, or with malnutrition resulting from improper diet and bad hygiene, characterized by the sudden occurrence, usually at night and without fever, of an adductor spasm of the glottis, with arrested breathing of from fifteen to thirty seconds duration, followed by a crowing, inspiratory stridor. Carpo-pedal spasm and convulsions often occur. Mild attacks are often designated by the parents as "passion fits," or "holding the breath."

M. H. Fussell says: "Laryngismus stridulus can be surely diagnosed by the chronicity of the case, the usual presence of rickets in the child, and frequently by the presence of Trousseau's sign, namely, the appearance of contraction of the finger and hand when firm pressure is made along the large vessels." The affection is rare in adults.

Causes of Spasm of the Glottis.—Adenoids; enlarged faucial tonsils, enlarged lingual tonsuls; chronic nasal disease (rhinitis, polypi, septal deformities); gastro-intestinal disturbances (catarrh, constipation, worms); dentition; whooping cough; measles; diphtheria; ear lesions; faucial or laryngeal irritation due to a foreign body, inflammation, ulceration, tuberculosis, syphilis, neoplasm, an elongated uvula, traumatism, or the action of caustics; uterine lesions; lithiasis; sexual excess; cerebral or spinal irritation; tabes (laryngeal crises); caries of neighboring vertebræ; hydrophobia; tetanus; epilepsy; pressure upon the pneumogastric or laryngeal nerves by a goitre, aneurysm, enlarged thymus gland, enlarged lymphatic glands, mediastinal and cervical tumors or abscess, retro-œsophageal abscess, cancer of the œsophagus, tubercular pleuritic adhesions over the right pulmonary apex; morphine or cocaine habit; rickets; malnutrition; neurotic temperament; hysteria; heredity; cold; emotion.

Treatment.—A. During the Attack.—Explore the pharynx and larynx at once for a foreign body, and incidentally induce gagging with the finger. Loosen the patient's clothing and open the windows for plenty of fresh air, dash cold water on the face, neck, and chest, or apply hot water or a mustard plaster to the nape of the neck or to the front of the neck and sternum, or place the feet in a mustard bath (about one tablespoonful of mustard to the gallon) at 95° F., or immerse the patient up to the chin in water as hot as can be borne and then dash cold water over the face and head, slap the back, rub the lips with a dry towel, place smelling salts to the nose or give a few whiffs of ether or chloroform, or employ rhythmic traction upon the tongue, fifteen to eighteen times to the minute; should the jaws be set, make traction by deep-seated pressure with the fingers under the angle of the jaw.

An emetic may be given, *e.g.*, warm salt water, or syrup of ipecac, 20 to 60 drops every twenty to thirty minutes until vomiting occurs; in children over three years of age, an equal amount of syrup of squills may be combined with the ipecac.

Intubation (*q.v.*) or tracheotomy (*q.v.*) is rarely demanded.

After the attack is over it may be wise to give calomel in divided doses, followed by a saline (see Part 11).

Spasm of the larynx in adults, says Kyle, "can be frequently controlled by the application of bland oils to the nasopharynx."

If the spasm is due to nerve pressure, spray the larynx with a 2 per cent. solution of cocaine and menthol, or employ inhalations of tincture of benzoin and paregoric, of each one teaspoonful to the pint of boiling water. St. Clair Thomson prescribes glass ampoules containing chloroform, ♏x, menthol, gr. ⅓, and ethyl iodide, ♏v, to be broken at the time of an attack and the contents inhaled. Pearls of amyl nitrite may also be used. He says: "The patient should be ordered to

keep the mouth closed and to breathe quietly through the nose."

Ammonia to the nose and cold affusions are recommended in hysterical cases.

B. Between Attacks.—First remove, if possible, all sources of reflex irritation (see Causes). Then strengthen the patient's physical and nervous stamina by the application of the rules of hygiene, *e.g.*, fresh air day and night, daily exercise out of doors, adequate but not too much clothing, plain, nutritious food at regular hours (see Infant Feeding, in Part 1, on General Medicine and Surgery), frequent bathing (two or three times daily place the child in a warm bath, and sponge the back and chest with cold water, followed by friction), and, if indicated, codliver oil, iron, arsenic, or phosphorus (see Drugs, Part 11).

Chloral, antipyrine, and the bromides are recommended for nervous hypersensitiveness (see Laryngitis Acuta, for Kerley's formulæ), but good hygiene is to be preferred. Forchheimer praised the bromides. To a child of one year may be given sodium bromide, gr. v, and chloral, gr. i, every three or four hours until the attacks are controlled, then three times a day. (Holt.) Holt prefers, however, antipyrine,—to a child of one year, gr. i–ii every four hours, the dose to be gradually diminished as the symptoms improve. Calcium Chloride, says Holt, is sometimes very effectual and sometimes not; to a child of one year he gives gr. vi, four or five times a day.

St. Clair Thomson recommends in mild cases in infants a few drops of a solution of resorcin, gr. ii-v, in normal saline solution or olive oil, one ounce, into the nostrils several times a day. He also quotes Eustace Smith as warmly recommending, as an antispasmodic, "10 to 30 drops of liquid extract of grindelia, in water flavored with the liquid extract of liquorice and well sweetened with glycerine, every four hours."

Laryngitis Acuta.—Gr. λάρυγξ larynx + *-ιτις* inflammation; L. *acu'tus*, sharp. An acute catarrhal inflammation of the laryngeal mucosa, of about three to twelve days duration, characterized, in adults, by hoarseness or aphonia, local irritation and desire to clear the throat, and sometimes a metallic cough. In children, the affection is more serious than in adults, because the glottis is narrower, the tendency to laryngeal spasm marked, and the danger of suffocation consequently greater. It is characterized, in children, by a spasmodic, barking cough, hoarseness, and attacks of dyspnœa (formerly called false, non-membranous, or spasmodic croup).

Etiology.—Exposure to cold and wet and to draughts; poor ventilation; indoor life and sedentary habits; dust and irritating inhaltions and applications; swallowed hot or corrosive liquids; traumatism; mouth breathing; poor health; contiguous inflammation; gastro-intestinal irregularities; violent coughing; overuse and improper use of the voice; excessive use of tobacco; alcoholism; foreign body; acute infectious diseases (catarrhal fever, influenza, measles, whooping cough, smallpox, chicken-pox, rötheln, scarlet fever, diphtheria, typhoid fever, erysipelas); hayfever; syphilis; tuberculosis; persistent vomiting and retching; passionate crying or sobbing; lithiasis.

A. Treatment in Adults.—In the early dry or congestive stage, enjoin rest indoors, preferably in bed, in a comfortable, well-ventilated room, free from draughts, at a temperature of 65°–70° F., and with the air surcharged with steam. Rest of the voice should also be enjoined. Open the bowels with castor-oil or calomel (see Part 11). Prescribe liquid diet, copious hot drinks, *e.g.*, lemonade, barley water, linseed tea, or whiskey and water, and a hot mustard footbath (about one tablespoonful to the gallon), or a full hot bath, if it can be taken without danger of subsequent exposure. Apply to the neck, over the larynx and trachea to the middle of the sternum, cold or warm applications, a turpentine fomentation (see Part 11), mustard poultice (*q.v.*), tincture of iodine, or unguentum capsici (*q.v.*). Massage of the neck by stroking the jugulars toward the heart is beneficial. Every one, two, or three hours, have the patient inhale for five to fifteen minutes or longer, steam medicated with compound tincture of benzoin, ʒi to the pint of boiling water over an alcohol lamp, to which may be added a teaspoonful of paregoric; or steam medicated with creosote, gtt. x–xv.

Tincture of aconite, one drop in water every fifteen minutes for several hours, or until dryness of the throat or tingling of the fingers is produced, is well recommended. Some administer an effervescent pilocarpine tablet (gr. $\frac{1}{100}$) every hour for three or four doses. Kyle says that relief may be obtained in a few hours, in the early stage, by the administration of dilute nitric acid, 5 to 10 drops in water, at first every half hour, and later every hour for two or three doses; or, ℞ Acidi nitrici diluti, ♏iii, tr. opii deodorati, ♏iii, cocainæ phenati, gr. $\frac{1}{10}$, every hour for three or four doses.

For distressing cough, prescribe codeine, gr. $\frac{1}{12}$–$\frac{1}{8}$–$\frac{1}{4}$, every three, four, or six hours

until relieved; or heroin, gr. $\frac{1}{12}$; or morphine, gr. $\frac{1}{8}$–$\frac{1}{4}$; or the following:

℞ Menthol..... ℥ss
Eucalyptol..... ℥i
Olei menthæ piperitæ..... ℥ss

M. Sig.—Inhale five drops from a respirator for twenty minutes, every four hours. (Birkett.)

Adrenalin, 1 : 5000 to 1 : 2000, applied in the form of a spray several times daily, may be of service.

Should œdema occur, apply ice-bags to the neck for forty minutes, followed by the application of two leeches on each side of the neck, give the patient ice to suck, open the bowels freely by means of calomel and salines, employ free diaphoresis by means of Dover's powder, or pilocarpine, gr. $\frac{1}{8}$, hypodermically, and hot lemonade, and spray the larynx every one, two, or three hours with a solution of cocaine, 2 per cent., in adrenalin, 1 : 2000. Multiple punctures (do not scarify) may be made into the swollen tissues, previously cocainized with a 10 per cent. solution of cocaine, with a laryngeal lancet, by the aid of a laryngeal mirror and reflected light (see Throat Technique), followed perhaps by the application of ichthyol, 20 to 30 per cent. aqueous solution, or liquor ferri persulphatis, gtt. v–x ad ℥i, or silver nitrate, gr. ii–v ad ℥i. Immediate tracheotomy (*q.v.*) may, however, be demanded.

After the acute stage has subsided and the secretion has become established, replace the steam inhalations by sprays of liquid vaseline, albolene, cosmoline, paroline, or benzoinol, either plain or medicated with ol. santali, gtt. iv–vi, and ol. picis liquidi, gtt. i–iii, to the ounce; or camphor-menthol (equal parts rubbed together until liquefied), gr. v–x to the ounce; or apply by means of a syringe, atomizer, or cotton-wound, corrugated applicator (see Throat Technique), a solution of silver nitrate, 1 to 2 per cent., or zinc chloride or sulphate, 1 to 3 per cent. Richardson says: "I wish to impress upon my readers the importance of thorough cleansing of the nasal, pharyngeal, and laryngeal mucous membrane (with a warm alkaline lotion: see Rhinitis Acuta, in Part VIII, on Nose Diseases) before making topical applications to the larynx."

For persistent huskiness is recommended sodium benzoate, gr. v, or compound elixir of terpin hydrate (Llewellyn's), ℥i, three or four times a day, together with a spray of tannin or alum, gr. v–x to the ounce.

In cases of obscure origin the iodides (Part 11) are usually beneficial.

Prophylaxis.—This embraces fresh air day and night, daily exercise in the fresh air, clothing neither too light nor too heavy, dry stockings, heavy-soled shoes, linen-mesh underwear, rubbers in wet weather, no neck protectors, frequent warm baths in a comfortable room, followed by a moderately cool sponge and brisk rubdown with a coarse towel, proper house ventilation, avoidance of overheated rooms, dust, dietetic errors, the excessive use of alcohol and tobacco, etc., and the correction of nasal defects (spurs, septal deflection, chronic rhinitis, adenoids, etc.).

B. Treatment in Children.—Administer, in the beginning, calomel, gr. i–ii in divided doses, followed by a saline (see Part 11), or castor-oil, one to three teaspoonfuls. Place the child's feet or the whole body in hot mustard water (a heaping tablespoonful of mustard to six gallons) for fifteen minutes, then put to bed and cover with woolen blankets. Keep the room properly ventilated, at a temperature of about 70° F., and the air surcharged with steam. Rub the neck vigorously with camphorated oil, or linimentum saponis (Part 11) or equal parts of lard and turpentine. Hot applications over the larynx (from ear to ear) are useful. In older children, cold compresses, applied every thirty minutes, may be preferable. Several times a day, or as often as desired, employ for twenty or thirty minutes at a time, inhalations of steam medicated with creosote, gtt. x, or compound tincture of benzoin, ℥i, or a solution of menthol, gr. x, in one ounce of tr. eucalypti or spt. vini rectificati, one teaspoonful in a pint or quart of steaming water contained in a Holt croup kettle or saucepan over an alcohol lamp, and under a sheet supported by an umbrella.

For distressing cough, prescribe paregoric, Dover's powder, codeine (see Part 11), or antipyrine and sodium bromide (see below):

℞ Ammonii bromidi..... gr. xvi (gr. ii per dose)
Ammonii carbonatis.... gr. xvi (gr. ii per dose)
Tincturæ aconiti..... ♏viii (♏i per dose)
Glycerini..... ℥ii (♏xv per dose)
Aquæ, q.s. ad..... ℥ii

M. Sig.—Two drams every two hours. (C. W. Richardson.)

℞ Tincturæ opii camphoratæ..... ♏xxxii (♏ii per dose)
Tincturæ belladonnæ... ♏xvi (♏i per dose)
Ammonii bromidi..... gr. lxxx (gr. v per dose)
Syrupi tolutani..... ℥i (℥ss per dose)
Aquæ, q.s. ad..... ℥ii

M. Sig.—One dram every hour until relieved (for a child two years of age). (M. H. Fussell.)

For the relief of dyspnœa, sedative drugs are effectual:

	1 year	2 years	3 to 6 yrs
℞ Antipyrinæ.....	gr. ss	gr. i	gr. ii
Sodii bromidi.....	gr. ii–iii	gr. ii–iii	gr. iv
Syrupi ipecacuanhæ..	♏ii–iii	♏iii	♏iii
Aquæ, q.s. ad.....	℥i	℥i	℥i

M. Sig.—One dram every two hours—eight doses in twenty-four hours. (Kerley.)

Holt gives one grain of antipyrine every two hours to a child of one year. It may have to be given only at bedtime for three or four successive nights. Forchheimer praised the bromides.

If there is much mucus in the throat, give an emetic, *e.g.*, wine or syrup of ipecac, one or two teaspoonfuls, repeated in twenty minutes, if necessary; or one teaspoonful every thirty or sixty minutes until vomiting occurs.

Intubation (*q.v.*) or tracheotomy (*q.v.*) is rarely demanded. Where intubation has been performed, the tube may usually be removed in two or three days.

Prophylaxis.—This embraces fresh air day and night, adequate clothing, dry stockings and good shoes, a daily bath with momentary cold sponging of the neck and chest followed by friction, a liberal, bland diet at regular hours (see Infant Feeding, in Part 1, on General Medicine and Surgery), the removal of enlarged tonsils and adenoids, and, if indicated, codliver oil, maltine, iron, or arsenic (see Part 11).

Laryngitis, Atrophic.—See Atrophic Laryngitis.

Laryngitis, Chronic Catarrhal.—Gr. λάρυγξ larynx + *-ιτις* inflammation; *χρόνος* time; *καταῤῥεῖν* to flow down. A chronic catarrhal inflammation of the laryngeal mucosa, characterized clinically by impairment and alteration of the voice, manifested by lowering of the tone and hoarseness or huskiness, and increased secretion, manifested by frequent clearing of the throat and slight expectoration; and anatomically by congestion in the simple catarrhal form, more or less generalized thickening in the hypertrophic form, and localized thickening of the vocal cords (singer's or teacher's nodules) in the nodular form.

There is a rare, intractable form of hypertrophic laryngitis, called pachydermia laryngis, characterized by more or less symmetrical thickenings of the epithelium and subepithelium over the posterior ends of the vocal cords, with resulting hoarseness and sometimes dysphagia.

Etiology.—Repeated attacks of acute laryngitis (*q.v.*); disorders of the nose nasopharynx, pharynx, and mouth (mouth breathing, chronic turgescent or hypertrophic rhinitis, septal deformities, polypi, sinusitis, adenoids, nasal suppuration, enlarged faucial or lingual tonsils, elongated uvula, dental caries, pyorrhœa alveolaris, etc.); chronic tracheitis and bronchitis; pulmonary tuberculosis; asthma; hay fever; chronic cough; constant exposure to dust or other irritating inhalations; local tuberculosis or lupus; leprosy; neoplasms; syphilis; paralysis; frequent fits of weeping; overuse or faulty use of the voice; excessive use of alcohol, tobacco, or condiments; arsenic; potassium iodide; lithiasis; gastro-intestinal, hepatic, cardiac, or renal disease, especially chronic constipation; perhaps menstrual disorders; perhaps anæmia.

The exciting cause of singer's or teacher's nodules is overuse or misuse of the voice.

Prognosis.—This is fairly good, and depends upon the stage of development of the disease and the eradicability of its cause. Three to six months of treatment may be required for the hypertrophic form.

Treatment.—First direct the attention to the correction of any and all possible causal factors, and impress upon the patient the importance of observing good hygiene, adequate rest and exercise, fresh air day and night with the avoidance of draughts, adequate clothing, but not too heavy, dry stockings, heavy-soled shoes, rubbers in wet weather, a daily warm bath in a warm room before breakfast, followed by a moderately cold douche and brisk rubdown with a coarse towel, proper house ventilation, avoidance of overheated rooms, dust, alcohol, tobacco, dietetic errors, etc., regular hours of eating and sleeping, and regulation of the bowels.

Rest of the voice, as nearly absolute as possible, is important. Three or four times daily, the larynx and also the nose and pharynx, if affected, may be cleansed by means of a warm alkaline spray, viz.:

℞ Mentholis.....	gr. ii
Sodii bicarbonatis	
Sodii biboratis, aa.....	gr. v
Aquæ.....	℥i

℞ Sodii bicarbonatis,	
Sodii biboratis,	
Sodii chloridi,	
Sacchari albi, aa.....	gr. v
Acidi carbolici.....	gr. viii
Aquæ.....	℥iv

After thus cleansing the larynx, employ a spray of liquid vaseline (cosmoline), albolene, benzoinol, or paroline, either plain or medicated with menthol, gr. v–xxx ad ℥i,

or camphor-menthol (equal parts rubbed together until liquefied), gr. v–x ad ʒi, or ol. santali, ♏iv–vi, and ol. picis liquidæ, ♏i–iii, ad ʒi.

Medicated steam inhalations are also beneficial, but they should not be employed when the patient is going about out of doors. The inhalations may be taken through an improvised paper cornucopia or under a sheet, the water being heated in a tin over an alcohol lamp, and medicated with creosote, gtt. x–xv ad Oi, or tincture of benzoin, ʒi ad Oi.

Eucalyptol, ol. pini sylvestris, or terebene, five drops, alone or in combination, may be inhaled from a respirator for twenty minutes three times a day.

In inveterate cases, employ every other day to once a week, astringent applications: zinc chloride, gr. ii–xxx ad ʒi; silver nitrate, gr. ii–c ad ʒi; zinc sulphate, gr. v–xv ad ʒi; iron perchloride, gr. iii–xxx ad ʒi; copper sulphate, gr. iii–x ad ʒi; alum, gr. xxx ad ʒi; alumnol, gr. xv ad ʒi; lactic acid, gr. x ad ʒi. The stronger solutions are employed in hypertrophic laryngitis. The solution may be applied in the form of a spray, or with the laryngeal brush, or on cotton, with Sajous's forceps, the excess of fluid always being squeezed from the cotton before the application is made. Says Sajous, the infraglottic region should always be included in the application. For supracordal applications, the tongue should be held out and the patient told to sound *a*; for subcordal applications, the tongue is held out and the application made during a deep inspiration. Should spasm of the laryngeal muscles be excited by the application, "instruct the patient to take a number of deep breaths in rapid succession." (Ballenger.)

For profuse but tenacious secretions is recommended sodium benzoate, gr. v–xv (see Part 11), three or four times daily; or fl. ext. hydrastis, gtt. v–xxx, in water, three or four times daily.

For scanty secretions and dryness is recommended potassium iodide, gr. v–x (see Part 11), t.i.d.; or ℞ Iodi, gr. ⅛, phosphori, gr. $\frac{1}{100}$, bromini, gr. ⅛, vini xerici, ʒi M. Sig. One dram well diluted, t.i.d. (Kyle.)

Potassium iodide, gr. v, t.i.d., with perhaps protoiodide of mercury, and a ferruginous tonic (see Part 11 for all drugs) are valuable for the promotion of absorption in hypertrophic laryngitis, as well as for any associated bronchitis. Saline cathartics in small doses may also be useful.

In nodular laryngitis, absolute rest of the voice is most important. Says St. Clair Thomson: "It may require months of absolute dumbness in some cases before the nodules will completely disappear." When quicker results are important, or conservative treatment fails, large nodules may be removed with intralaryngeal forceps and small or sessile ones may be very carefully touched with a fine galvanocautery point. Suspension laryngoscopy (with the Killian-Lynch apparatus) affords easy approach to all parts of the larynx. Correct anæmia, if present (consult Part 1). Faulty use of the voice should, of course, be corrected.

After the most important changes induced by a chronic laryngitis have been corrected, "any remaining paresis of the cords may be met by the administration of strychnine, the use of faradism, or a course of static electricity." (St. Clair Thomson.)

Laryngitis, Diphtherial.—See Diphtheria, Laryngeal.

Laryngitis, Dry.—See Atrophic Laryngitis.

Laryngitis, Edematous.—See Œdema of the Larynx.

Laryngitis, Hypertrophic.—Gr. *ὑπέρ* over + *τροφή* nutrition. See Laryngitis, Chronic Catarrhal.

Laryngitis, Nodular.—L. *nod'ulus*, little knot. See Laryngitis, Chronic Catarrhal.

Laryngitis, Œdematous.—See Œdema of the Larynx.

Laryngitis, Sicca.—L. *sic'cus*, dry. See Atrophic Laryngitis.

Laryngitis, Simple Chronic.—L. *sim'plex*. See Laryngitis, Chronic Catarrhal.

Laryngitis, Spasmodic.—Gr. *σπασμός* spasm. See Laryngitis Acuta; and Laryngismus Stridulus.

Laryngitis, Tuberculous.—See Tuberculosis of the Larynx.

Larynx, Affections of the.—See Laryngeal Affections.

Lingual Abscess.—L. *lin'gua*, tongue; *absces'sus*, a going apart. See Lingual Tonsillitis, Acute.

Lingual Quinsy.—Fr. *cynan'che*, sore throat. See Lingual Tonsillitis, Acute.

Lingual Tonsil, Hyperplasia of the.—See Hyperplasia of the Lingual Tonsil.

Lingual Tonsil, Inflammation of the.—L. *inflamma're* to set on fire. See Lingual Tonsillitis, Acute.

Lingual Tonsillitis, Acute.—L. *lin'gua*, tongue; *tonsil'la*, tonsil; *acu'tus*, sharp.

Synonyms.—Preglottic tonsillitis; lingual abscess; lingual quinsy.

The symptoms are similar to those of acute faucial tonsillitis, with the difference of location; the lingual tonsil being situated at the base of the tongue behind the circumvallate papillæ and in front of the epiglottis.

The prognosis is good.

Treatment.—Open the bowels with powdered calomel, followed by a saline. Employ the same local measures as for acute faucial tonsillitis (*q.v.*). If an abscess forms, it should be incised.

Lipoma.—Gr. λίπος fat + -ωμα tumor. See Tumors of the Naso-Pharynx and Pharynx; and Tumors of the Larynx.

Loss of Voice.—See Aphonia.

Ludwig's Angina.—See Part 1, General Medicine and Surgery.

Lupus of the Nose and Throat.—L. *lu'pus*, wolf. Lupus, as contrasted with the ordinary form of tuberculosis, is characterized by the occurrence of numerous, slow-growing, indolent or painless, minute, discrete, mud-brown or apple-butter-brown nodules, (rendered distinct by the application of cocaine or adrenalin), with but slight secretion, no œdema, and of good prognosis.

The ordinary form of tuberculosis is characterized by the occurrence of diffuse infiltration, proneness to œdema, greater secretion, sensitiveness and often pain, a progressive course, and more serious prognosis. It is very rare in the nose and pharynx but not in the larynx (see Tuberculosis of the Larynx).

Lupus in the nose occurs mostly on the cartilaginous septum, the floor, and the anterior end of the inferior turbinal; in the larynx it occurs mostly on the epiglottis. Ulceration is prone to occur, followed by scarring and retraction.

Treatment.—Good hygiene, adequate rest and exercise, fresh, pure air day and night, a daily morning warm bath in a warm room followed by a cold spinal douche, regular hours of eating and sleeping, rest before and after meals, a plain but abundant diet, adequate clothing, personal cleanliness, the avoidance of dust, tobacco, and alcohol, and perhaps codliver oil, hypophosphites, creosote, arsenic, or strychnine (see Drugs Part 11), is of the first importance.

A single lupus tumor of the septum should be completely excised. In more extensive cases, the centre of each intact nodule should be penetrated with a fine galvanocautery point, and each ulcer should be thoroughly cauterized, and then treated with lactic acid, 60 per cent., or a mixture of iodine, ℥i, potassium iodide, ℥ii, and distilled water, ℥ii, or unguentum ac. pyrogallici, 10 to 20 per cent., or unguentum hydrargyri dilutum, ℥i, ad petrolatum mollem, ℥i, the application to be renewed daily.

Extensive cases first require thorough scraping, under general anæsthesia, with a Volkmann spoon or ring-knife, the posterior nares being first plugged. To prevent subsequent contraction, Meyer's vulcanite splints smeared with mercury ointment should be worn in the nostrils. The scraping may have to be repeated every few weeks until the diseased tissue is all destroyed.

The parts should be kept cleansed with an alkaline lotion (see under Rhinitis Acuta), followed by a spray of liquid vaseline, albolene, paroline, cosmoline, or benzoinol.

For the relief of irritation and for the purpose of softening crusts, one may apply the following on tampons: ℞ Resorcinolis, balsami Peruvianæ et mucilaginis acaciæ, aa (Fordyce.)

For laryngeal lupus, St. Clair Thomson well recommends the galvanocautery (under cocaine anæsthesia, 10 to 20 per cent., repeatedly applied). He uses a fine-pointed electrode, "brought almost to a white heat," and "firmly thrust through the diseased area until its arrest shows that healthy tissue has been reached." "Several cauterizations are carried out at one sitting, which is repeated every ten to twenty days until complete healing takes place." Chromic acid fused on the end of a probe (first warm the probe, dip it in the chromic acid crystals, then warm the part of the probe next beyond the crystals until the latter melt), may also be used. Fungating masses may first be cut off with punch forceps before using the cautery. Suspension laryngoscopy (with the Killian-Lynch apparatus) affords easy approach to all parts of the larynx.

Watch for and attack recurrences.

Lymphoma Laryngis.—L. *lym'pha*, lymph + Gr. -ωμα tumor. See Tumors of the Larynx.

Membranous Non-Diphtherial Inflammation.—See Tonsillitis Acuta.

Mogiphonia.—Gr. μόγις difficulty + φωνή voice. See Phonic Spasm, under Neuroses of the Larynx.

Mycosis of the Throat.—See Pharyngomycosis.

Myxoma Laryngis.—Gr. μύξος mucus + -ωμα tumor. See Tumors of the Larynx.

Naso-Pharyngeal Catarrh.—L. *nas'us*, nose; Gr. φάρυγξ pharynx; καταῤῥεῖν to flow down. See Naso-Pharyngitis Acuta, and Chronica.

Foreign Bodies.—See Foreign Bodies in the Air Passages.

Inflammation.—L. *inflamma're*, to set on fire. See Naso-Pharyngitis.

Lupus.—See Lupus of the Nose and Throat.

Naso-Pharyngeal Tumors.—See Tumors of the Naso-Pharynx and Pharynx.

Naso-Pharyngitis Acuta; Acute Post-Nasal Catarrh.—L. *nas'us*, nose; Gr. *φάρυγξ* + *-ιτις* inflammation; L. *acu'tus*, sharp; post, behind; Gr. *καταῤῥεῖν* to flow down. This affection occurs usually as an accompaniment of acute rhinitis (*q.v.*, in Part 8) or acute pharyngitis (*q.v.*).

Treatment.—Administer calomel in divided doses followed by a saline (see Part 11). By means of a post-nasal syringe, or a fountain syringe, or a catheter attached to a rubber bulb and passed through the nose, cleanse the naso-pharynx three or four times daily, with a very warm normal saline or alkaline antiseptic solution, sodium chloride, or bicarbonate, or biborate, one teaspoonful to the pint. When irrigating the throat, keep the mouth wide open, breathe through the mouth, and refrain from swallowing, in order to avoid the entrance of fluid into the eustachian tube. Inhalations of steam medicated with compound tincture of benzoin, ℥i ad Oi, are also serviceable.

The following antiseptic and astringent preparations applied on a cotton swab, are effectual: (1) silver nitrate, gr. x–xxx ad ℥i; (2) iodine, gr. vi, potassium iodide, gr. xv-xx, carbolic acid, ♏ii, or ol. menth. pip., ♏v, and glycerine, ℥i; (3) resorcin, gr. v, boroglyceride, ℥i; (4) argyrol, 25 per cent. solution; (5) boroglyceride, 50 per cent., and comp. tr. benzoin, equal parts; (6) ol. eucalypti, gtt. ii, ol. cassiæ, gtt. ii, ext. pini canadensis, gtt. x, tr. benzoin, q.s. ad ℥i, to which may be added cocaine, 3 per cent. (Kyle.)

In the early, dry stage, Kyle recommends the administration of a granular effervescent pilocarpine tablet, gr. 1/100, to be dissolved slowly in the mouth every hour, until the secretions are established.

For headache, prescribe phenacetin, gr. v–x, and repeat the dose if necessary.

Should the eustachian orifice become blocked, and earache, tinnitus, and deafness supervene, catheterize the eustachian tube (*q.v.*, in Part 7) and draw off the accumulated secretions.

To keep the nasal passages free, apply a spray of adrenalin, 1 : 5000, followed by a spray of camphor, gr. vii, and menthol, gr. xxv, in liquid albolene, ℥i.

Naso-Pharyngitis Atrophica.—See Atrophic Naso-Pharyngitis and Pharyngitis.

Naso-Pharyngitis Chronica; Chronic Post-Nasal Catarrh.—L. *na'sus*, nose; Gr. *φάρυγξ* + *-ιτις* inflammation; *χρόνος* time; L. *post*, behind; Gr. *καταῤῥεῖν* to flow down. Chronic post-nasal catarrh is characterized by local irritation and the dropping or hawking of mucus. It is sometimes rebellious to treatment.

Etiology.—Repeated attacks of acute naso-pharyngitis; remains of only partially atrophied adenoids; neighboring nasal or pharyngeal disease; sinusitis; nasal obstruction, as well as wide nasal passages; irritating vapors and dust; irritating medication; overuse of the voice, damp, variable climate; improper clothing; tobacco; alcohol; gastro-intestinal intoxication; gouty or rheumatic diathesis; poor health from any cause; infectious diseases (influenza, scarlet fever, diphtheria, etc.).

Treatment.—Attend to the cause, and enjoin the observance of correct hygiene, *e.g.*, fresh air day and night with the avoidance of draughts, adequate but not too heavy clothing, linen-mesh underwear, dry stockings and heavy-soled shoes, rubbers in wet weather, proper house ventilation, adequate rest and exercise, a daily warm bath in a comfortable room before breakfast, followed by a moderately cold douche and brisk rubdown with a coarse towel, avoidance of overheated rooms, dust, alcohol, tobacco, dietetic errors, etc., regular hours of eating and sleeping, and regulation of the bowels.

Remove completely any diseased remains of adenoids by means of small curettes, the postnasal forceps, galvanocautery, chromic acid, or lactic acid, ℥i ad ℥i. In employing cauterization, use a palate retractor and post-nasal mirror, and first apply cocaine, 20 per cent., on a cotton carrier. Take care not to touch healthy tissue with the caustic.

By means of a post-nasal syringe, or a fountain syringe, or a catheter attached to a rubber bulb and passed through the nose, cleanse the naso-pharynx daily, with a very warm normal saline or alkaline antiseptic solution, viz., sodium chloride or bicarbonate or biborate, one teaspoonful to the pint. When irrigating the throat, keep the mouth wide open, breathe through the mouth, and refrain from swallowing, in order to avoid the entrance of fluid into the eustachian tube.

Follow the cleansing process by a bland, oily spray, viz., liquid albolene, benzoinol, liquid vaseline, cosmoline, or paroline, to which may be added menthol, gr. v–xxx ad ℥i. Employ a weak solution of potassium permanganate if there is fetor.

Three times a week, or oftener, the parts, including the posterior part of the soft palate, may be sprayed or swabbed by means of a curved, cotton-wound applicator, with

one of the following antiseptic astringent solutions, viz., silver nitrate, gr. x–xxx ad ℥i; argyrol, 25 per cent.; zinc chloride, 2 to 5 per cent.; zinc sulphocarbolate. gr. viii ad ℥i; trichloracetic acid, 1:2000; iodine, gr. vi, potassium iodide, gr. xx, carbolic acid, ♏ii, or ol. menth. pip., ♏v, and glycerine, ℥i; resorcin, gr. v, boroglyceride, ℥i; boroglyceride, 50 per cent., and comp. tr. benzoin, equal parts; ol. eucalypti, gtt. ii, ol. cassiæ, gtt. ii, ext. pini canadensis, gtt. x, tr. benzoini, q.s. ad ℥i. (Kyle.)

One should remember that too prolonged local treatment is in itself irritating.

Ionic medication (*q.v.* in Part 1) is recommended.

Naso-Pharyngitis Mutilans.—(See Rhinopharyngitis Mutilans.

Nervous Laryngeal Cough.—Gr. *νεῦρον* nerve. See Neuroses of the Larynx.

Cry.—See Neuroses of the Larynx.

Neuralgia of the Pharynx.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See Neuroses of the Pharynx.

Neuroses of the Larynx.—Gr. *νεῦρον* nerve; *λάρυγξ* larynx. Neuroses of the larynx embrace anæsthesia; hyperæsthesia; paræsthesia; tonic adductor spasm, or laryngismus stridulus (*q.v.*,); clonic rhythmical adductor spasm; phonic adductor spasm; paralysis, functional or organic (see Aphonia); nervous laryngeal cough or cry; and choreic movements.

(a) **Anæsthesia.**—The laryngeal mucosa, on one side or both, is insensitive to the touch of the probe. As a result of this insensitiveness, food is apt to be aspirated into the lungs.

Causes.—Paralysis of the superior laryngeal nerve, due to diphtheria, influenza, pneumonia, typhoid fever, typhus fever, cholera, traumatism, railway spine, pressure from a tumor, tabes, general paresis, glossolabio-laryngeal paralysis, syringomyelia, multiple sclerosis, syphilis, hemorrhage; hysteria; anæmia; old age; local anæsthetics (cocaine and its congeners, orthoform, anæsthesin, menthol, ice, morphine, bromides, chloral, ethyl chloride, chloroform).

Treatment.—This embraces rest, strychnine in full dosage, external faradism, and massage. Marked cases may require feeding with the stomach tube (for the technique consult Part 1, under Dyspepsia; care is required in order to avoid inserting the tube into the trachea). In post-diphtheritic cases, recovery occurs in from one to six weeks.

(b) **Hyperæsthesia and Paræsthesia.**—The manifestations are pain, itching, burning, pricking, rawness, tightness, the feeling of a foreign body, cough.

Causes.—Hysteria; neurasthenia; hypochondriasis; fatigue, general, physical, vocal, or mental; anæmia; dyspepsia; alcoholism; the menopause; gout or rheumatism; early tabes; reflex nasal, pharyngeal, aural, buccal, dental, and tonsillar disorders; laryngitis; incipient tuberculosis.

Treatment.—This embraces the removal of the cause, good hygiene (adequate rest and exercise, fresh air day and night, regular hours of eating and sleeping, nutritious food, rest before and after meals, regulation of the bowels, and a daily morning warm bath, before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel), local external galvanism and massage, sprays of ice-water, or of menthol, gr. v–x to the ounce of benzoinol, liquid albolene, liquid vaseline, cosmoline, or paroline, and tonics of arsenic and iron (Part 11).

(c) **Clonic Rhythmical Spasm of the Adductors.**—This affection is said to occur in "paralysis agitans, after meningitis, in syphilis of the brain, in pressure on the medulla from tumors of the cerebellum, and in disease of the medulla in the neighborhood of the accessory nucleus." (St. Clair Thomson.)

(d) **Phonic Spasm; Dysphonia Spastica; Mogiphonia.**—This is an adductor spasm occurring in "professional voice-users of nervous temperament" on attempted phonation, and is analogous to writer's cramp.

Treatment.—This embraces absolute rest of the voice, massage, tonics, and the removal of nodules, if present (see Laryngitis, Chronic Catarrhal).

(e) **Nervous Laryngeal Cough or Cry.**—This includes the "barking cough of puberty." It is a form of "tic convulsif" (*q.v.*, in Part 1).

Treatment.—This embraces the correction of all possible reflex influences, such as adenoids, diseased tonsils, aural cerumen, etc., external faradism, tonics (iron, arsenic, codliver oil; see Part 11), and good hygiene (*q.v.*, under (b)).

(f) **Choreic Movements.**—These may occur in multiple sclerosis and in chorea.

Neuroses of the Pharynx.—Gr. *νεῦρον* nerve; *φάρυγξ* pharynx. Neuroses of the pharynx embrace anæsthesia; hyperæsthesia; paræsthesia; neuralgia; pharyngeal spasm, both tonic and clonic; and paralysis, functional or organic, of the soft palate or the pharyngeal constrictors.

(a) **Anæsthesia.**—Anæsthesia of the pharynx is of moment in itself only when it is so marked as to permit of food entering the larynx. It is caused by hysteria, diphtheria,

bulbar or glosso-labio-laryngeal paralysis, general paresis, and pressure on the glosso-pharyngeal nerve.

(b) **Hyperæsthesia and Paræsthesia.**—The causes are hysteria, hypochondriasis, the climacteric, gout, anæmia, dyspepsia, alcoholism.

(c) **Tonic Pharyngeal Spasm.**—The cause is usually hysteria; other causes are bulbar tumors, tabes, hydrophobia, tetanus, acute local inflammation.

(d) **Clonic Spasmodic Contractions.**—The causes are hysteria, reflex irritation, and organic brain disease.

(e) **Paralysis.**—Paralysis, practically always of the soft palate, is usually due to diphtheria, rarely to influenza, syphilitic or malignant basal meningitis, bulbar or glosso-labio-laryngeal paralysis, bulbar hemorrhage or embolism, bulbar tumors, tabes, syringomyelia affecting the bulb, hysteria, cervical tumors or tuberculous glands.

It is manifested by a cleft-palate voice, regurgitation of fluids through the nose, inability to whistle, suck, blow out the cheeks, or say "wrong," limp pendancy of the soft palate downwards and forwards, and immobility of the same on saying "*ah*" and on touching it with a probe. One should remember that regurgitation of fluids through the nose may also occur in injury or inflammation of the soft palate, in quinsy, œsophageal stricture, and affections of the pharynx, larynx, and base of the tongue which cause pain on swallowing.

Treatment.—This embraces tonics of strychnine and iron (see Part 11), perhaps faradism, and good hygiene (adequate rest and exercise, fresh air day and night, regular hours of eating and sleeping, nutritious food, rest before and after meals, regulation of the bowels, and a daily morning bath, before breakfast, in a warm room, followed by a cold spinal douche and brisk rubdown with a coarse towel).

Nodular Laryngitis.—L. *nod'ulus*, little knot. See Laryngitis, Chronic Catarrhal.

Nodules, Singer's and Teacher's.—See Laryngitis, Chronic Catarrhal.

Non-Diphtherial, Membranous, Inflammation.—See Tonsillitis Acuta.

Non-Membranous Croup.—See Laryngitis Acuta.

Obstruction of the Larynx.—Laryngeal obstruction is manifested by dyspnœa, during which the patient sits up and throws the head backward (in tracheal obstruction he holds the head slightly forward with the chin somewhat depressed), stridor, and alteration or loss of the voice.

Etiology.—I. Acute Obstruction.—Acute catarrhal laryngitis; laryngismus stridulus; membranous laryngitis; diphtheria; œdema of the larynx; foreign bodies; traumatic laryngitis, due to irritating gases, steam, corrosive fluids or powders; retropharyngeal abscess.

II. Chronic Obstruction (of gradual onset).—Syphilis; tuberculosis; perichondritis; injuries; new growths, benign and malignant; leprosy; scleroma; adhesions between the cords; recurrent laryngeal nerve paralysis; too high tracheotomy; chronic subglottic laryngitis or ulceration caused by wearing an intubation tube; ankylosis of the crico-arytenoid joint (manifested by fixation of the vocal cord resembling recurrent nerve paralysis), due to rheumatism, gout, syphilis, tuberculosis, pachydermia, traumatism, acute local inflammation, and long-standing recurrent nerve paralysis; laryngeal complications of typhoid fever, diphtheria, or smallpox; very rare congenital webs; very rare congenital laryngeal stridor, which tends to disappear during the second year.

Treatment.—The treatment is that of the cause (*q.v.* in its appropriate alphabetical place).

Cicatricial stenosis is treated by the prolonged wearing (for two to six years) of a dilating intubation tube or a T-shaped tracheotomy tube. Scar tissue may first have to be divided. Laryngofissure is sometimes required, and often tracheotomy (*q.v.*).

Suspension laryngoscopy (with the Killian-Lynch apparatus) affords easy approach to all parts of the larynx.

Obstruction of the Trachea.—See Part 1, General Medicine and Surgery.

Œdema of the Glottis.—Gr. *οἴδημα* swelling; *γλωττίς*. See Œdema of the Larynx, following.

Œdema of the Larynx.—Gr. *οἴδημα* swelling; *λάρυγξ* larynx. Laryngeal œdema, which practically always affects the arytenoepiglottidian folds and epiglottis, and not the glottis or vocal cords, as the designation, "œdema glottidis," would imply, is characterized by marked dyspnœa, stridor, and hoarseness, and marked swelling of the epiglottis and laryngeal structures on laryngoscopic or digital examination.

Etiology.—(a) Inflammatory Causes.—Acute catarrhal laryngitis, acute infectious diseases; syphilitic laryngitis; tuberculous laryngitis; neighboring inflammation—peritonsillar abscess, lingual quinsy, retropharyngeal abscess, Ludwig's angina, cancer of the œsophagus, chondritis, erysipelas.

(b) NON-INFLAMMATORY CAUSES.—Impaction of a foreign body; traumatism; violent use of the voice; irritating inhalations (steam, ammonia, bromine, smoke, etc.); irritating ingesta (scalding or corrosive fluids); caustic applications; carcinoma of the larynx; passive laryngeal congestion due to venous compression caused by a goitre, mediastinal growths or enlarged bronchial glands; dropsy due to cardiac, renal, hepatic, or pulmonary disease; nephritis; diabetes; myxœdema; angioneurotic œdema; hydrophobia; potassium iodide; antitoxin.

Prognosis.—This is always serious.

Treatment.—Put the patient to bed in a warm room, with the air surcharged with steam (compound tincture of benzoin may be added to the boiling water). Apply ice-bags to the neck for forty minutes, followed by two leeches on each side of the neck. Open the bowels freely by means of calomel and salines (see Part 11 for all Drugs), and employ free diaphoresis (by means of blankets, hot bricks covered with wet cloths sprinkled with alcohol, hot lemonade, Dover's powder, or pilocarpine, gr. ⅛ hypodermically). Have the patient suck ice. Spray the larynx every one, two, or three hours, with a solution of cocaine, 2 per cent., in adrenalin, 1 : 2000. Multiple punctures may be made into the œdematous tissues (previously cocainized with a 10 per cent. solution of cocaine) with a laryngeal lancet, by the aid of a laryngeal mirror and reflected light, followed perhaps by the application of a 20 to 30 per cent. aqueous solution of ichthyol.

In angioneurotic œdema and that due to potassium iodide, administer sodium bicarbonate freely. Ice is contraindicated in angioneurotic œdema.

Tracheotomy (*q.v.*) is sometimes demanded; intubation is useless.

Œdema of the Uvula.—See Uvulitis Acuta et Œdema Uvulæ.

Œsophageal Carcinoma.—Gr. *ὀίσειν* to carry + *φάγημα* food; *καρκίνος* crab + *-ωμα* tumor. See Part 1, General Medicine and Surgery.

Dilatation.—See Part 1.

Diverticula.—See Part 1.

Foreign Bodies.—See Foreign Bodies in the Œsophagus.

Inflammation.—L. *inflammar'e*, to set on fire. See Œsophagitis in Part 1.

Stricture.—See Part 1.

Œsophagitis.—See Part 1.

Ogo.—See Rhinopharyngitis Mutilans.

Osteoma Laryngis.—Gr. *ὀστέον* bone + *-ωμα* tumor. See Tumors of the Larynx.

Pachydermia Laryngis.—Gr. *παχύς* thick + *δέρμα* skin. See Laryngitis, Chronic Catarrhal.

Palate, Soft, Paralysis of the.—L. *pala'tum* palate; Gr. *παρά* beside + *λύειν* to loosen. See Neuroses of the Pharynx.

Papilloma.—L. *papill'a*, nipple + Gr. *-ωμα* tumor. See Tumors of the Larynx, and of the Naso-pharynx and Pharynx.

Paræsthesia Laryngis.—Gr. *παρά* beside + *αἴσθησις* sensibility. See Neuroses of the Larynx.

Pharyngis.—See Neuroses of the Pharynx.

Paralysis, Abductor.—Gr. *παρά* beside + *λύειν* to loosen; L. *ab*, from + *duc'ere*, to draw. See Aphonia.

Adductor.—L. *ad*, to + *duc'ere*, to draw. See Aphonia.

Arytenoideus.—Gr. *ἀρύταινα* jug or pitcher + *εἶδος* form. See Aphonia.

Bulbar.—Consult Part 1, on General Medicine and Surgery.

of the Constrictors of the Pharynx.—L. *con*, together + *strin'gere*, to draw. See Neuroses of the Pharynx.

Cords.—Gr. *χορδή* cord. See Aphonia.

Glosso-Labio-Laryngeal.—Gr. *γλῶσσα* tongue; L. *lab'ium*, lip. See Bulbar Paralysis, in Part I.

Larynx.—See Aphonia.

Palate.—L. *pala'tum*. See Neuroses of the Pharynx.

Pharyngeal Constrictors.—L. *con*, together + *strin'gere*, to draw. See Neuroses of the Pharynx.

Recurrent Laryngeal Nerve.—L. *recur'rens*, returning. See Aphonia.

Soft Palate.—L. *pala'tum*. See Neuroses of the Pharynx.

Superior Laryngeal Nerve.—See Aphonia.

Thyroarytenoidei Muscles.—Gr. *θυρεός* shield; *ἀρύταινα* jug; *εἶδος* form. See Aphonia.

Vocal Cords.—L. *voca'lis*, from *vox*, voice; *chor'da*, cord. See Aphonia.

Parenchymatous Tonsillitis.—Gr. *παρέγχυμα* essential or functional portion of an organ as distinguished from its stroma. See Tonsillitis Acuta.

Perichondritis Laryngis.—See Chondritis and Perichondritis of the Larynx.

Peritonsillar Abscess, Quinsy.—Gr. *περί* around; L. *tonsil'la*, tonsil; *absces'sus*, a going apart; Fr. *cynan'che*, sore throat. Quinsy is characterized by local pain and swelling or bulging, coated tongue, offensive breath, lock-jaw, dysphagia, fever, chills, malaise and anorexia. It is usually unilateral, and

often passes from one side to the other. It may follow acute tonsillitis, or it may occur as a primary affection. Recurrent quinsy is usually the result of a chronic lacunar tonsillitis. The duration of an attack is from five to ten days, unless relieved by operative interference.

Treatment.—Open the bowels thoroughly with powdered calomel followed by a saline (see Part 11); and for pain prescribe the remedies given under Tonsillitis Acuta. Salol is particularly recommended.

Apply heat externally, and syringe or irrigate the throat frequently, at least every hour, with tepid normal saline or an alkaline solution, *e.g.*, sodium chloride, biborate, or bicarbonate, one teaspoonful to the pint. When irrigating the throat, keep the mouth wide open, breathe through the mouth, and refrain from swallowing, in order to avoid the entrance of fluid into the eustachian tube. A fountain syringe is best for the purpose.

As soon as bulging or fluctuation about the faucial pillar is evident (this is sometimes best determined by palpation), or earlier if the symptoms are intense, incise the abscess where it points with a straight, narrow-bladed tenotome; or, in the absence of pointing, pull the tonsil medianward and forward by means of forceps, separate the tonsil from the anterior pillar, as in the operation of tonsillectomy, and thus reach the abscess cavity; or make the incision through the anterior pillar.

After the pus has been evacuated, continue the warm irrigations.

Pharyngeal Anæsthesia.—Gr. *φάρυγξ*; *ἀν* not + *αἴσθησις* sensation. See Neuroses of the Pharynx.

Diverticulum.—L. *diverticul'are*, to turn aside. See Œsophageal Diverticula, in Part 1.

Foreign Bodies.—See Foreign Bodies in the Air Passages.

Fungus Disease.—L. *fun'gus*. See Pharyngomycosis.

Herpes.—See Herpes of the Throat.

Hyperæsthesia.—Gr. *ὑπέρ* over + *αἴσθησις* sensibility. See Neuroses of the Pharynx.

Hyperkeratosis.—See Keratosis Pharyngis.

Inflammation.—L. *inflamma're*, to set on fire. See Pharyngitis.

Keratosis.—See Keratosis Pharyngis.

Lupus.—See Lupus of the Nose and Throat.

Mycosis.—See Pharyngomycosis.

Neuralgia.—Gr. *νεῦρον* nerve + *ἄλγος* pain. See Neuroses of the Pharynx.

Pharyngeal Neuroses.—See Neuroses of the Pharynx.

Paræsthesia.—Gr. *παρά* beside + *αἴσθησις* sensibility. See Neuroses of the Pharynx.

Paralysis.—Gr. *παρά* beside + *λύειν* to loosen. See Neuroses of the Pharynx.

Spasm.—Gr. *σπασμός*. See Neuroses of the Pharynx.

Tumors.—(See Tumors of the Pharynx,

Pharyngeal Ulcers.—L. *ul'cus*, ulcer. **Etiology.**—Chronic catarrh (follicular ulcers); syphilis; tuberculosis or lupus; carcinoma; diphtheria and other pseudo-membranous inflammations; typhoid and other fevers.

Pharyngitis Acuta.—Gr. *φάρυγξ* pharynx + *-ιτις* inflammation; L. *acu'tus*, sharp. An acute inflammatory affection of the pharyngeal mucosa, of from several days to one or two weeks duration, characterized by sore throat, fever, headache, malaise, anorexia, and constipation. The initial stage of the disease is marked by congestion and dryness, which is later followed by increased secretion.

Etiology.—Exposure to cold and wet; sudden thermic changes; bad hygiene; sedentary occupation; intemperance in eating and in the use of alcohol and tobacco; acute indigestion; lithiasis; certain ingesta, which are eliminated through the mucous membrane, *e.g.*, onions, garlic, phosphorus, mercury, antimony, arsenic, iodine, bromine; local traumatism produced by hot fluids, hot spices, raw spirits, corrosives, irritating vapors, foreign bodies, or operations; mouth breathing; adjacent infection, *e.g.*, tonsillitis, adenoiditis, rhinitis, sinusitis, quinsy, laryngitis, pyorrhœa alveolaris; acute infectious diseases, *e.g.*, catarrhal fever, influenza, scarlet fever, measles, German measles, small-pox, diphtheria, typhoid fever, typhus fever, erysipelas, syphilis; milk from cows affected with streptococcus mastitis.

The bacteria usually found are staphylococci, streptococci, pneumococci, and bacillus influenzæ.

Treatment.—Open the bowels with powdered calomel, followed by a saline (see Part 11 for all drug formulæ, etc.), and have the patient drink freely of Vichy water or hot water containing sodium chloride and bicarbonate, aa gr. v–xv to the tumblerful. The diet in the acute stage should be liquid or soft: milk, eggs, cereals, milk toast, cool lemonade (no beef extracts or beef tea,—Knapp.) The salicylates are considered "almost specific": sodium salicylate, or salol or aspirin, or salophen, gr. x every two hours until relieved. Add phenacetin or antipyrine for the relief of headache.

An old and useful remedy is the tincture of iron:

℞ Tincturæ ferri chloridi. ℥iss (♏vii–xv per dose)
Glycerini..... ℥iv
Syrupi aurantii, q.s. ad. ℥ii
M. Sig.—One or two teaspoonfuls, well diluted, every three or four hours, best taken through a glass tube, followed by rinsing and brushing of the teeth.

Cold or heat may be employed externally. A wet towel around the neck, covered with a dry towel and left on overnight, may prove beneficial. Massage of the neck by stroking the jugulars toward the heart is of service.

The application of strong silver nitrate solution on a cotton-wound, corrugated applicator, or on cotton pledgets held with hæmostatic forceps, from which the excess of fluid has been expressed, may prove abortive if employed early.

In the early, dry stage, the patient may dissolve slowly in the mouth, every hour, for three or four doses, an effervescent pilocarpine lozenge, gr. $\frac{1}{100}$. Potassium chlorate lozenges or troches (*q.v.*) are also recommended in this stage. For the rawness and irritation are recommended inhalations of steam medicated with comp. tr. benzoin, one tablespoonful to the pint of boiling water; also lozenges of camphor and menthol, of krameria, of catechu, and of red gum. Guaiacum lozenges are recommended for the gouty. Cracked ice may be sucked.

℞ Resinæ guaiaci..... gr. iss
Acidi tannici..... gr. ¼
M. Sig.—One lozenge slowly dissolved on the tongue every one or two hours.

The throat should be cleansed frequently by syringing, gargling, or spraying with warm normal saline or an alkaline antiseptic solution, *e.g.*, sodium chloride, biborate, or bicarbonate, one teaspoonful to the pint; or with potassium chlorate, 1 to 3 per cent.; or alum, 3 to 5 per cent.; or one of the following:

℞ Sodii biboratis..... gr. xxiv
Glycerini..... ♏xxiv
Tincturæ myrrhæ..... ♏xxiv
Aquæ destillatæ, q.s. ad..... ℥i
M. Sig.—Use every hour as a gargle. (Parker.)

℞ Sodii bicarbonatis,
Sodii biboratis, aa..... gr. xv
Acidi carbolici..... ♏v
Glycerini..... ♏xlv
Aquæ, q.s. ad..... ℥i
M. Sig.—Use frequently as a spray or gargle.

℞ Potassium chloratis, vel sodii chloridi, vel ammonii chloridi,
Sodii biboratis,
Sodii bicarbonatis, aa..... ℥ss
Sacchari albi..... ℥i
M. Sig.—One level teaspoonful, dissolved in half a glass of water and used as a gargle.

℞ Tincturæ krameriæ..... ♏x
Tincturæ myrrhæ..... ♏x
Tincturæ lavandulæ compositæ ♏v
Glyceriti boroglycerini..... ℥i
Aquam, ad..... ℥i
M. Sig.—Use frequently as a mouth-wash and gargle.

℞ Extracti hamamelidis aquosi,
Aquæ cinnamomi,
Aquæ menthæ piperitæ, aa.
M. Sig.—Throat gargle to be used every hour for dryness of the throat. (Kyle.)

℞ Glyceriti acidi tannici..... ℥ii
Sig.—One teaspoonful to a glass of warm water as a gargle. (Knapp.)

℞ Camphoræ..... gr. ii
Mentholis..... gr. ii
Olei santali..... gtt. iv
Olei eucalypti..... gtt. ii
Alboleni liquidi..... ℥i
M. Sig.—Throat spray. (Kyle.)

For excessive secretion in the second or exudate stage, is recommended atropine or aconitine, gr. $\frac{1}{400}$ to $\frac{1}{300}$ every three or four hours, to the point of a beginning physiological effect (see Part 11).

An œdematous uvula may be freely punctured and sprayed with adrenalin, 1 : 2000; ice too may be sucked.

Ulcerated areas may be touched with silver nitrate, gr. xxx ad ℥i, or zinc chloride, gr. xv ad ℥i.

Pharyngitis Atrophica.—See Atrophic Naso-pharyngitis and Pharyngitis.

Pharyngitis Catarrhalis Chronica.—Gr. *φάρυγξ* + *-ιτις* inflammation; *καταῤῥεῖν* to flow down; *χρόνος* time. A chronic, usually obstinate, inflammatory affection of the pharyngeal mucosa, characterized clinically by local sensitiveness and discomfort, frequent desire to clear the throat, cough, and weak voice; and anatomically by congestion, swelling, and a dusky-red, velvety appearance (simple chronic or catarrhal pharyngitis), with perhaps the presence of small, reddish or yellowish elevations, consisting of lymphatic tissue (granular or follicular pharyngitis), or enlarged, dull-red folds behind the posterior faucial pillars (pharyngitis hypertrophica lateralis).

Etiology.—Recurrent or long-continued acute attacks; overuse and improper use of the voice (clergyman's sore throat); dyspepsia; lithiasis; alcoholism; anæmia; constipation; diabetes; narcotic addiction; sexual excesses; tuberculosis; syphilis; cyanotic congestion secondary to cardiac, renal, hepatic, or pulmonary disease; tobacco; irritating vapors and dust; mouth-breathing; adjacent inflammation and growths: adenoids, diseased and enlarged tonsils, rhino-

pharyngitis, rhinitis, laryngitis, dental caries, pyorrhœa alveolaris; "slanting pharynx"; infectious diseases (influenza, scarlet fever, measles, diphtheria).

Prognosis.—This depends upon one's success in removing the cause.

Treatment.—First search carefully for any and all possible etiological influences, and eradicate them as far as possible. Granular effervescent phosphate or sulphate of sodium ʒi–iv, or granular effervescent citrate of lithium, gr. v, with plenty of water, in the morning one hour before breakfast or before each meal, is often useful. St. Clair Thomson says: "The various alkaline mixtures with vegetable bitters are frequently of more benefit than any topical treatment"; and he recommends, where there is dyspepsia the following:

℞ Pulveris rhei..... gr. v
Ammonii carbonatis..... gr. v
Infusi quassiæ..... ʒss
Aquæ menthæ piperitæ, q.s. ad ʒi
M. Sig.—One ounce (two tablespoonfuls) before meals. (Thomson.)

Adequate rest and recreation, warm clothing, dry stockings and good shoes, rubbers in wet weather, fresh air day and night, proper house ventilation, regular hours of eating and sleeping, rest before and after meals, a daily morning warm bath before breakfast, in a warm room, followed by a moderately cold spinal douche and brisk rubdown with a coarse towel, the avoidance of overheated rooms, dust, dietetic errors, alcohol, and tobacco, and tonics, particularly arsenic (see Part 11), are important.

For voice strain, absolute rest of the voice should be enjoined; and later the patient should be instructed in proper methods of respiration and elocution. All unnecessary hawking should be forbidden.

The throat should be cleansed frequently by irrigating, syringing, or spraying, with quite hot normal saline or an alkaline solution, *e.g.*, sodium chloride, bicarbonate, or biborate, ʒi ad Oi; or sodium bicarbonate or biborate, gr. xv ad ʒi; or sodium bicarbonate sodium biborate, sodium chloride, and saccharin albi, aa gr. v–x ad ʒi. If much irritation remains, a gargle of camphorated tincture of opium, one teaspoonful to the ounce of water, or a menthol lozenge, may be employed. For cough and irritation are prescribed codeine, gr. 1/12 to 1/8, three or four times daily, or sodium bromide, gr. x–xv, well diluted, after meals and at bedtime (Part 11).

Once or twice a week the pharynx may be mopped or painted with silver nitrate, gr. x–xxx ad ʒi; sulphate or chloride of zinc, gr. ii–v–xv ad ʒi; copper sulphate, gr. x–xx ad ʒi; tannic acid, gr. xl ad glycerine, ʒi; or iodine, gr. v, potassium iodide, gr. xv, glycerine, ʒi. Throat paints should not be "rubbed in."

In granular or follicular pharyngitis, touch each follicle with chromic acid fused on the end of a probe (warm the probe, dip it in the chromic acid crystals, then warm the part of the probe next beyond the crystals until the latter melt), or with a 20 per cent. chromic acid solution on a finely pointed, cotton-wound applicator, the excess of caustic being first removed, and the surface of the pharynx mopped dry; or the entire surface may be mopped every other day with the following:

℞ Olei pini sylvestris,
Olei eucalypti, aa..... gtt. v
Mentholis..... gr. iv
Tincturæ benzoini..... ʒi (Kyle.)

In pronounced cases the galvanocautery may be used (under cocaine anæsthesia, 10 per cent.). The needle should be fine-pointed, and inserted at a white heat, not too deeply. Four or five follicles may be destroyed at a sitting at intervals of five or six days. The patient should continue the daily use of alkaline cleansing solutions. The follicles may be curetted at a single sitting with an E. Mayer curette. (Gleason.)

If the uvula is elongated, it may be amputated (see Elongation of the Uvula).

Pharyngitis, Dry.—See Atrophic Naso-pharyngitis and Pharyngitis.

Follicular.—L. *follic'ulus*, little bag. See Pharyngitis Catarrhalis Chronica.

Granular.—L. *gran'ulum*, grain. See Pharyngitis Catarrhalis Chronica.

Hypertrophica Lateralis.—Gr. *ὑπέρ* over + *τροφή* nutrition; L. *la'tus*, side. See Pharyngitis Catarrhalis Chronica.

Sicca.—L. *sic'cus*, dry. See Atrophic Naso-pharyngitis and Pharyngitis.

Pharyngomycosis.—Gr. *φάρυγξ* pharynx + *μύκης* fungus. An affection of the throat caused by the Leptothrix fungus and characterized by the presence of white masses upon an inflamed surface. Examine the white material under the microscope.

Treatment.—Remove the growth with the curette or forceps, and apply tincture of iodine or silver nitrate (ʒi ad ʒi), twice daily. Keep the mouth cleansed with hot boric acid solution, ʒi–iv ad Oi. Attend to the teeth and to any existing gastro-intestinal derangement, and interdict sweets.

If these measures prove ineffectual, employ the galvanocautery. Use a very small platinum wire at a white heat, and touch only a few patches at each sitting.

Pharynx, Affections of the.—See Pharyngeal Affections.

Phonasthenia.—Gr. *φωνή* voice + *α* priv. + *σθένος* strength. See under Speech Defects.

Phonic Spasm.—Gr. *φωνή* voice; *σπασμός* spasm. See Neuroses of the Larynx.

Polypus.—Gr. *πολύς* many + *πούς* foot. See Tumors of the Naso-pharynx and Pharynx.

Post-nasal Catarrh, Acute.—L. *post*, behind; *nas'us*, nose; Gr. *καταῤῥεῖν* to flow down. See Naso-pharyngitis Acuta.

Chronic.—See Naso-pharyngitis Chronica.

Inflammation.—L. *inflamma're*, to set on fire. See Naso-pharyngitis.

Preglottic Tonsillitis.—L. *præ*, before + Gr. *γλωττίς* glottis. See Lingual Tonsillitis, Acute.

Pseudolalia.—Gr. *ψευδής* false + *λαλεῖν* to babble. See Speech Defects.

Quinsy, Faucial.—Fr. *cynan'che*, sore throat; L. *fau'ces*. See Peritonsillar Abscess.

Lingual.—L. *ling'ua*, tongue. See Lingual Tonsillitis, Acute.

Recurrent Laryngeal Nerve Paralysis.—L. *recur'rens*, returning. See Aphonia.

Retropharyngeal Abscess.—L. *retro*, back + Gr. *φάρυγξ*; L. *absces'sus*, a going apart.

Synonym.—Suppurative retropharyngeal adenitis.

Acute retropharyngeal abscess occurs nearly always in feeble infants as a complication of nasal, buccal, pharyngeal, or middle ear inflammation, or of the acute infectious diseases. Chronic abscess occurs practically always as a result of cervical Pott's disease.

The manifestations are as follows, viz.: retraction of the head, cough, noisy dyspnœa, altered voice, difficulty in swallowing, and the presence of a rounded swelling, best revealed by digital examination.

The condition is serious.

Treatment.—In acute cases, make hot applications until fluctuation is detected, then incise the abscess vertically with the child inverted (without anæsthesia), and with the finger as a dull curette, explore and enlarge the abscess cavity. Holt opens the abscess with the finger nail sharpened to a point.

If the abscess points towards the neck, make the incision along the posterior border of the upper third of the sterno-cleido-mastoid muscle, and carry the dissection behind the large vessels of the neck and in front of the prevertebral muscles.

An iron tonic (see Part 11) may then be given. Recovery is usually rapid.

A tuberculous abscess is preferably opened externally because of the resulting sinus which may persist for many months.

Retropharyngeal Adenitis, Suppurative.—Gr. *ἀδήν* gland + *-ιτις* inflammation; L. *sub*, under + *pus, pur'is*, pus. See Retropharyngeal Abscess.

Rhinopharyngitis Mutilans; Gangosa; Ogo.—Gr. *ῥίς* nose; *φάρυγξ* pharynx + *-ιτις* inflammation; L. *mut'ilans*, mutilating; Sp. *gangosa*, muffled voice. A tropical, ulcerative, destructive affection of the rhinopharynx or soft palate, extending to adjacent parts, and resistant to treatment.

Treatment.—Cauterize the ulcers with the silver nitrate stick, chromic acid solution, 20 per cent., or the actual cautery, the parts being first mopped dry and anæsthetized with cocaine, 10 per cent. Prescribe a cleansing, alkaline, antiseptic spray or douche, *e.g.*, sodium bicarbonate or biborate, ʒi–iv ad Oi. Applications of tincture of iodine are well recommended.

Prescribe an abundance of good food, outdoor exercise, and tonics. Potassium iodide (see Part 11) may be tried.

Rhinopharynx.—See Naso-pharyngeal Affections.

Rhythmical Clonic Spasm of the Adductors.—Gr. *ῥυθμός*; *κλόνος* turmoil; *σπασμός*; L. *addu'cere*, to draw toward. See Neuroses of the Larynx.

Scarlet Fever.—Consult Part 1, on General Medicine and Surgery.

Singer's Nodules.—L. *nod'ulus*, little knot. See Laryngitis, Chronic Catarrhal.

Soft Palate Paralysis.—L. *pala'tum*; Gr. *παρά* beside + *λύειν* to loosen. See Neuroses of the Pharynx.

Spasm, Clonic, of the Adductors.—Gr. *σπασμός*; *κλόνος* turmoil. See Neuroses of the Larynx.

Glottic.—Gr. *γλωττίς*. See Laryngismus Stridulus.

Laryngeal.—See Laryngismus Stridulus.

Pharyngeal.—See Neuroses of the Pharynx.

Phonic.—Gr. *φωνή* voice. See Neuroses of the Larynx.

Rhythmical Clonic, of the Adductors.—Gr. *ῥυθμός*; *κλόνος* turmoil; L. *ad.* to + *duc'ere*, to draw. See Neuroses of the Larynx.

Spasmodic Croup.—See Laryngitis Acuta, and Laryngismus Stridulus.

Laryngitis.—See Laryngitis Acuta, and Laryngismus Stridulus.

Speech Defects.—**A. Stammering and Stuttering.**—CAUSES.—Heredity, the male sex, nervous temperament, eye-strain, glandular enlargements in the pharynx, adenoids, enlarged tonsils, intranasal intumescence, hypertrophies, polypi and septal deformities, and thymic enlargement (Browning) are cited as predisposing causes, and nervous shock as an exciting cause.

Treatment.—This embraces perfect hygiene (see below), the correction of all possible etiological factors, and instruction in proper diaphragmatic breathing and the voluntary control of the speech muscles, the patient being trained to speak in a state of relaxation, calmly, slowly, and in syllables, and to lengthen and strengthen the principal vowels. Browning reports success in the treatment of stammering by the application of the X-rays over the thymus. From two to four treatments are given at intervals of from five to fifteen days, after which there should be a pause of several weeks (see Röntgenology in Part 1).

B. Phonasthenia or Weak Voice.—(Gr. *φωνή* voice + *α* priv. + *σθένος* strength.).—Voice fatigue is characterized by a weak, unsteady voice, which tends to break and to slide off the pitch into a lower key, also huskiness, tendency to clear the throat constantly, pain in the sides of the neck, and pain on swallowing.

CAUSES.—Faulty voice placement (too high pitching), submucous laryngeal hemorrhage (*q.v.*), anæmia, debilitating diseases, convalescence from typhoid and influenza, pregnancy, menstruation, chronic tonsillitis, chronic hypersecretion, nasal affections.

TREATMENT.—Rest of the voice is of first importance. Any possible causal influence should be corrected, and perfect hygiene observed, *e.g.*, adequate rest, exercise, and recreation, fresh air day and night, a daily morning tepid bath in a comfortable room, before breakfast, followed by a cold spinal douche and brisk rubdown with a coarse towel, massage, if practicable, regular hours of eating and sleeping, rest before and after meals, plain, wholesome food, regulation of the bowels, and if indicated, tonics, iron, arsenic, strychnine (see Part 11).

Warm applications for pains, and a menthol spray (gr. v–xxx ad liquid albolene, ℥i), for its cooling, analgesic effect, may be prescribed.

After the physical and nervous stamina has been restored, the patient should be instructed in the proper use of the voice. "The speech must be slow, fairly light, with good lip and tongue action." "The voice should be directed forward against the upper teeth and hard palate, and increased and diminished in a monotone." "Certain syllabic exercises such as the *no, na, nu, ni, na,* and *co, ro, mo,* varieties sung with moderate strength in middle voice are helpful." "During these exercises special attention must be paid to the breathing" (after Voorhees).

C. Pseudolalia.—(Gr. *ψευδής* false + *λαλεῖν* to babble).—Pseudolalia means the "decapitation, decaudation, and mutilation of syllables." It is treated the same as stammering. Any possible mechanical cause should be removed and syllabication taught.

Stammering.—See Speech Defects.

Stenosis of the Larynx.—Gr. *στένοσις* narrowing. See Obstruction of the Larynx.

Stenosis of the Trachea.—See Part 1.

Stricture of the Œsophagus.—See Part 1, General Medicine and Surgery.

Stridor.—See Part 1.

Stuttering.—See Speech Defects.

Submaxillary Cellulitis.—L. *sub,* under + *maxil'la,* jaw; *cel'lula,* minute cell + Gr. *-ιτις* inflammation. See Ludwig's Angina, in Part 1.

Submucous Laryngeal Hemorrhage.—L. *sub,* under + *mu'cus,* mu'cus; Gr. *λάρυγξ*; *αἷμα* blood + *ῥηγνύναι* to burst forth. An extravasation of blood beneath the mucous membrane of the vocal cords, due usually to a sudden vocal strain, as in screaming, singing, talking, coughing, or sneezing, or due to heavy lifting, during which the glottis is closed. Other rarer causes are acute inflammation, tuberculosis, syphilis, benign and malignant neoplasms, and the following constitutional affections: cardiac dilatation, hepatic cirrhosis, nephritis, anæmia, malnutrition, phthisis, diabetes, hæmophilia, leukæmia, variola, typhoid fever, yellow fever, vicarious menstruation, and pregnancy.

The manifestations are sudden hoarseness, pain, and vocal fatigue, and the appearance of red patches of hemorrhage on the cords, which are not dislodged by coughing or manipulation.

Treatment.—Excepting absolute rest of the voice, no treatment may be required, and spontaneous recovery usually occurs within several weeks.

If desired, however, one may prescribe astringent sprays, with the object of promoting absorption, viz., alumnol solution, 3 to 10 per cent.; or aluminis, gr. vi, acidi tannici, gr. iii, aquæ destillatæ, ad. ℥i; or zinc chloride, 3 to 5 per cent. For

cough, prescribe codeine, gr. $\frac{1}{8}$, every hour until effectual.

Superficial Tonsillitis. — L. See Tonsillitis Acuta.

Superior Laryngeal Nerve Paralysis.— See Aphonia.

Swallowing, Difficult or Painful. — See Dysphagia in Part 1.

Syphilis. — Consult Part 1, on General Medicine and Surgery.

Teacher's Nodules.—L. *no'dulus*, little knot. See Laryngitis Chronic Catarrhal.

Technique.—In making a laryngoscopic examination with the mirror, the tongue is covered with a cloth and drawn out and held by the patient. The surface of the mirror is first heated and the temperature of its metallic back tested on the hand before insertion in the throat.

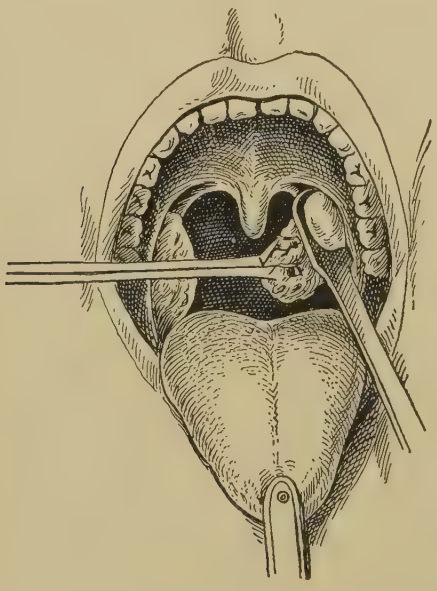


Fig. 112

Medicated solutions may be applied to the larynx in the form of a spray, or with the laryngeal brush, or on cotton, with Sajous's forceps, the excess of fluid always being squeezed from the cotton before the application is made. For supracordal applications, the tongue should be held out and the patient told to sound *a*; for subcordal applications, the tongue is held out and the application made during a deep inspiration. Should spasm of the laryngeal muscles be excited by the application, "instruct the patient to take a number of deep breaths in rapid succession." (Ballenger.)

The larynx is syringed under good illumination, with the patient holding his own tongue. He is instructed to take a long breath and then say a prolonged *E*, during which the fluid is injected against the vocal cords. At the conclusion of the treatment the patient should close his mouth, and take deep breaths through the nose, in order to avoid laryngeal spasm.

In insufflating powders, have the patient first take a deep breath, and then exhale after the powder has been blown in.

Throat paints should not be "rubbed in."

Easy access to the larynx is obtained by means of suspension laryngoscopy.

In fusing chromic acid on the end of a probe, first warm the probe, dip it in the chromic acid crystals, and then warm the part of the probe next beyond the crystals until the latter melt.

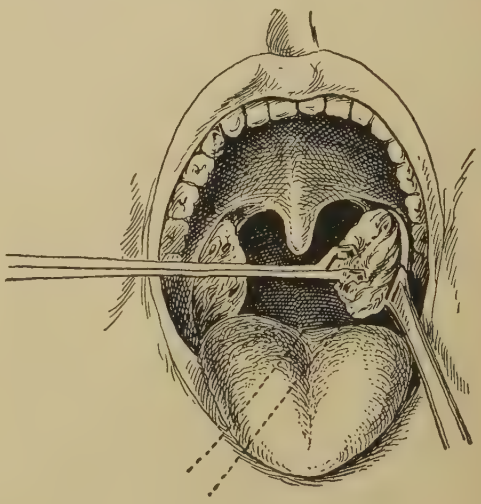


Fig. 113

In using the electro-cautery, first cocainize and then dry the parts carefully. Then turn on the current until the cautery point is at a cherry-red heat. A white heat causes hemorrhage, while a dull heat causes adherence of the point to the charred tissues. Remove the cautery before turning off the current.

Thyro-arytenoidei Muscles, Paralysis of the.—Gr. *θυρεός* shield; *ἀρύταινα* jug; *εἶδος* form. See Aphonia.

Thyroid Gland Tumor of the Larynx.—Gr. *θυρεὸς* shield + *εἶδός* form; L. *glans*, a cord. See Tumors of the Larynx.

Tonsillectomy.—L. *tonsil'la*, tonsil + Gr. *ἐκτομή* excision.

Indications for Tonsillectomy and Adenectomy. —Mouth-breathing; chronic rhinitis; deafness; otitis media; recurrent tonsillitis;

recurrent quinsy; chronic tonsillitis; enlarged cervical glands; harboring of diphtheria germs; and systemic conditions probably due to tonsillar infection, *e.g.*, rheumatism, chorea, endocarditis, pleuritis, pericarditis, tuberculosis, gastric ulcer, appendicitis, gastro-intestinal trouble, goitre, asthma, etc.

The Operation.—Many operators prefer the guillotine. St. Clair Thomson prefers Heath's modification of Mackenzie's pattern, with a small fenestra (three-quarter inch) through which the tonsil must be threaded. Wilfred Harris prefers Elphick's modification of Ballenger's instrument. The lower or right tonsil is removed first (see Figs. 112 and 113).

Enucleation of the tonsil from above downward with the finger, after first dividing the mucous membrane above the upper pole with curved, blunt-pointed scissors, is done by many. The tonsil usually remains attached below, and is then divided with scissors or a wire snare. It is well to keep punch forceps on hand to perform morcellation when the tonsil proves soft and friable.

A good method of removing the tonsils is the following: Under ether anæsthesia, carried on by means of a crooked hollow metal tube curving around the cheek and attached to a syringe containing ether, open the mouth by means of a combination mouth-gag and tongue depressor, and bring the patient's head over the edge of the operating table so that the tonsillar region may be viewed from behind the head. Grasp the tonsil with forceps and separate it from the faucial pillars with a cutting hook. Then remove the tonsil with a cold-wire snare, slowly tightened so as to avoid hemorrhage. Bleeding points may be caught with forceps, applied vertically and ligated with silk.

Other measures for checking excessive bleeding are as follows: (1) syringing with ice cold water; (2) syringing with hot water; (3) pressure for ten to twenty minutes with lint dipped in hydrogen peroxide or adrenalin solution, 1 : 2000 to 1 : 1000; (4) the application of a special forceps, with one blade against the tonsillar fossa and the other outside the neck; (5) clamping the two pillars of the fauces together with forceps; (6) sewing the two pillars over a roll of lint wet with a styptic, using a long curved needle or Michel's hooks, for which special instruments are required.

In order to lessen reaction and soreness, one may apply a 25 per cent. solution of tincture of iodine to the tonsillar fossæ immediately after the operation. Atropine (Part 11) may be administered before the operation to lessen secretion.

Light, soft diet is required for several days following a tonsillectomy. Ice may be sucked.

If tonsillectomy is not feasible, the tonsils may be burned (following cocainization, 5 per cent.) with the galvanocautery every five or six days, until they are sufficiently reduced.

Tonsil, Lingual, Abscess of the.—L. *absces'sus*, a going apart. See Lingual Tonsillitis, Acute.

Hyperplasia of the.—See Hyperplasia of the Lingual Tonsil.

Inflammation of the.—L. *inflamma're*, to set on fire. See Lingual Tonsillitis, Acute.

Tonsillitis Acuta.—L. *tonsil'la*, tonsil + Gr. *-ιτις* inflammation; L. *acu'tus*, sharp. An acute infection of the tonsils, of about a week's duration, characterized clinically by sore throat, fever, malaise, anorexia, fetid breath, coated tongue, headache, backache, and pains in the limbs; and anatomically by inflammatory hyperæmia and swelling in the catarrhal form or stage, the presence of discrete, white, gray, or yellow patches of exudate in the follicular or lacunar form, and marked swelling, œdema, and focal suppuration in the parenchymatous form.

Complications to be feared are endocarditis, pericarditis, pneumococcic peritonitis, pneumonia, acute nephritis, arthritis, and otitis media.

Quinsy (*q.v.*) and chronic enlargement may ensue.

Vincent's angina is an uncommon, nonvirulent, subacute, ulcerative, pseudo-membranous inflammation which occurs in debilitated and unsanitary subjects, and is due to Vincent's anaerobic bacillus. Diphtheria and syphilis are to be excluded.

The tonsillitis of diphtheria is associated with less pain and fever than the ordinary acute tonsillitis, the false membrane more often spreads over the faucial pillars, soft palate and uvula, rhinorrhœa and albuminuria are frequent, involvement of the larynx, manifested by hoarseness, stridor, or a croupy cough, commonly occurs, the Klebs-Loffler bacilli are demonstrable, and paralyses or cardiac disturbance is prone to follow.

Etiology.—Sudden climatic and thermic changes; exposure to cold and wet; poor health; irritating inhalations (bad air, sewer gas, coal gas, etc.); mouth-breathing; tonsillar hypertrophy and chronic tonsillitis; suppurative sinusitis; intra-nasal operations; impaction of a foreign body; infectious diseases (catarrhal fever, influenza, scarlet fever, measles, diphtheria, secondary syph-

ilis); gastro-intestinal disorders; gouty or rheumatic diathesis; septic conditions of the mouth and teeth; milk from cows infected with streptococcus mastitis.

The bacteria usually present are streptococci, sometimes staphylococci, pneumococci, Vincent's bacillus, etc.

Treatment.—In doubtful cases the patient should be isolated and the advisability of administering diphtherial antitoxin considered.

Open the bowels in the beginning with castor-oil or powdered calomel followed by a saline, and order liquid or soft diet with plenty of lemonade.

For the relief of pain and fever, prescribe powdered salol, gr. v–x, with phenacetin, gr. v–x, repeated if necessary; or aspirin, gr. v–x, with or without phenacetin, gr. v; or sodium salicylate, gr. xv–xx, with or without antipyrine, gr. iii–v; or quinine bromide, gr. ii, and antipyrine, gr. iii, in capsule, every three hours until the fever is abated; or tinct. guaiaci ammoniati, gtt. xv–xx; or guiacol carbonate, gr. v, in wine or milk, every two hours; or tinct. aconiti, gtt. i, every hour or two until the fever and pain are reduced (consult Part 11 for the proper doses for children). The salicylates are regarded by some as almost specific.

Cold or heat may be applied externally in the form of a wet towel around the neck from ear to ear, covered with a dry towel. A silk covered cotton collar is grateful.

Ballenger says: "One application of a 50 to 90 per cent. solution of nitrate of silver, made during the first twenty-four hours of the disease, will in nearly every instance abort the attack." The application is made by means of a cotton-wound corrugated probe or a cotton pledget held in hæmostatic forceps, from which all excess of the caustic fluid is expressed, so that none of it may run down into the larynx and produce alarming spasm of the glottis.

Some advise mopping the tonsils once or twice a day with silver nitrate, ʒi ad ʒi, or argyrol, 25 per cent., or carbolized glycerine, gr. v ad ʒi, or pure guaiacol, or tr. ferri chloridi, ʒi, in glycerine q.s. ad ʒi. Others prefer frequent gargling or spraying, or better, syringing of the throat with a hot solution of sodium chloride, bicarbonate, or biborate, ʒi ad Oi; or boric acid solution, ʒi–iv ad Oi, with or without carbolic acid, ʒi; or hydrogen peroxide, half strength, or one of the following:

℞ Hydrogeni peroxidi,
Extracti hamamelidis aquosi,
Aquæ cinnamomi, aa..... ʒi
Chlorali hydrati..... gr. x
(Kyle.)

℞ Acidi salicylici..... ʒi
Sodii chloridi..... ʒx
Sodii bicarbonatis..... ʒiiss
M. Sig.—Half a teaspoonful dissolved in a small tumblerful of tepid water. (Lermoyez.)

℞ Acidi carbolici..... gr. l
Sodii biboratis..... ʒi
Potassii bromidi..... ʒi
Spiritus menthæ piperitæ..... ʒss
Glycerini, q.s. ad..... ʒiv
M. Sig.—A teaspoonful in half a tumblerful of tepid water. (St. Clair Thomson.)

Instruct the patient, when syringing the throat, to keep the mouth wide open, to breathe through the mouth, and to refrain from swallowing, in order to prevent the entrance of fluid into the eustachian tube.

Lozenges of guaiacum, of carbolic acid, gr. ¼, and menthol, gr. 1/20, and of formalin gr. 1/8, made with "glyco-gelatine" or "fruit paste" (Thomson) are useful.

Thomson says: "In small or fractious children the following should be given, undiluted":

℞ Tincturæ ferri chloridi..... ʒii
Glycerini, q.s. ad..... ʒii
M. Sig.—One-half dram every hour. (St. Clair Thomson.)

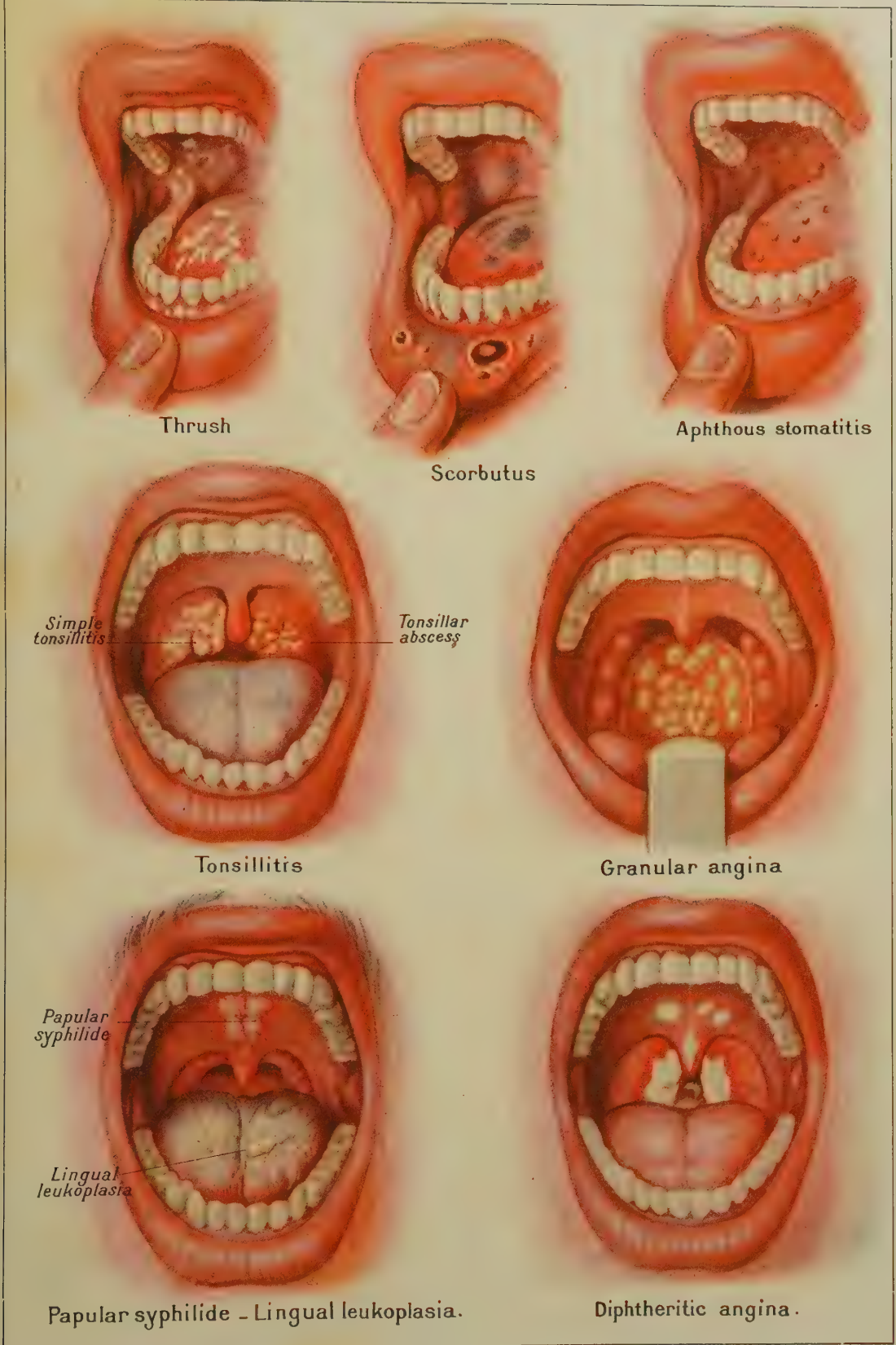
Where there is much œdema, relief is afforded by multiple punctures, followed by irrigation of the throat with hot normal saline or boric acid solution (ʒi ad Oi) and the application of heat externally. Adrenalin, 1 : 1000, and medicated vapors (comp. tr. benzoin, one tablespoonful to a pint of steaming water over an alcohol lamp) are also of benefit in these cases.

During convalescence, prescribe rest, fresh air, nourishing diet, and tonics, *e.g.*, the elixir ferri, quininæ, et strychninæ phosphati, Fowler's solution, Blaud's pills, freshly prepared, or syrupus ferri iodidi (consult Part 11). Rest, fresh air, nourishing food, tonics, cleanliness of the mouth, and the local application of silver nitrate, 2 per cent. or pure tincture of iodine after cleansing with hydrogen peroxide, half strength, constitute the treatment of Vincent's angina.

Tonsillitis, Catarrhal.—Gr. *καταῤῥεῖν* to flow down. See Tonsillitis Acuta.

Chronic Lacunar.—L. *tonsil'la*, tonsil; Gr. *χρόνος* time; L. *lacúna*, a small pit. A chronic affection of the tonsils, characterized by the presence of fetid, caseous plugs in the tonsillar crypts or lacunæ.

Treatment.—Remove the tonsils (see Tonsillectomy), or slit open the crypts, remove the cheesy material, and apply peroxide of hydrogen through a syringe with a small cannula attached; or apply, by means of a long, thin applicator wound with a minute



Mouth diseases

amount of cotton, a 20 per cent. solution of trichloracetic acid, or 40 to 80 per cent. silver nitrate solution, or iodine and potassium iodide, aa ʒiss ad ʒi; or employ the galvanocautery in several sittings.

Tonsillitis, Diphtherial.—See Diphtheria, in Part 1.

Erythematous.—L.; Gr. *ἐρίθημα* redness. See Tonsillitis Acuta.

Follicular.—L. *folli'culus*, little bag. See Tonsillitis Acuta.

Hypertrophic.—Gr. *ὑπέρ* over + *τροφή* nutrition. See Tonsillitis, Chronic Lacunar; and Tonsillectomy.

Lacunar, Acute.—L. *lacu'na*, a little pit. See Tonsillitis Acuta.

Chronic.—See Tonsillitis, Chronic Lacunar.

Lingual, Acute.—(See Lingual Tonsillitis, Acute.

Parenchymatous.—Gr. *παρέγχυμα* the essential or functional portion of an organ, as distinguished from its stroma. See Tonsillitis Acuta.

Preglottic.—L. *præ*, before + Gr. *γλωττίς* glottis. See Lingual Tonsillitis, Acute.

Superficial.—L. See Tonsillitis Acuta.

Ulcerative.—L. *ul'cus*, ulcer. See Tonsillitis Acuta.

Tonsils, Enlargement of the.—See Tonsillectomy.

Hyperkeratosis of the.—See Keratosis Pharyngis.

Hypertrophied.—Gr. *ὑπέρ* over + *τροφή* nutrition. See Tonsillectomy.

Inflammation of the.—L. *inflamma're*, to set on fire. See Tonsillitis.

Keratosis of the.—See Keratosis Pharyngis.

Removal of the.—See Tonsillectomy.

Tumors of the.—See Tumors of the Naso-pharynx and Pharynx.

Tracheal Foreign Bodies.—L.; Gr. *τραχεῖα* rough. See Foreign Bodies in the Air Passages.

Fracture.—See Fracture of the Trachea, in Part 10.

Inflammation.—L. *inflamma're*, to set on fire. See Bronchitis, in Part 1.

Obstruction.—See Part 1.

Tumors.—See Obstruction of the Trachea in Part 1.

Tracheitis.—See Bronchitis, in Part 1.

Tracheotomy.—Gr. *τραχεῖα* trachea + *τέμνειν* to cut. See under Diphtheria in Part 1.

Tuberculosis of the Larynx.—L. *tuber'culum*, nodule; Gr. *λάρυγξ* larynx. Laryngeal tuberculosis is secondary to pulmonary tuberculosis. It almost always first attacks the arytenoid and interarytenoid regions. The prognosis is serious, but not necessarily hopeless. A cure is possible, but early diagnosis and treatment are essential.

Treatment.—Correct hygiene (adequate rest and exercise, prolonged absolute rest of the voice, constant pure, fresh air, nutritious food, regular hours of eating and sleeping, rest before and after meals, adequate clothing, a daily morning warm bath in a warm room, followed by a cold spinal douche, personal cleanliness, the avoidance of dust, tobacco, and alcohol); and perhaps codliver oil, maltine, hypophosphites, creosote, arsenic, or strychnine, (see Drugs, Part 11), is of the first importance (consult Tuberculosis, Pulmonary, in Part 1, on General Medicine and Surgery).

The larynx should be kept cleansed by means of an alkaline, antiseptic spray, viz., ℞ Sodii bicarbonatis et sodii biboratis, aa gr. iii, acidi carbolici, gr. i, sacchari albi, gr. v, aquam ad ʒ–iv; or ℞ Sodii bicarbonatis et sodii biboratis, aa gr. x, ad aq. ext. hamamelidis et aquam, aa ʒss (Kyle); followed by an oily spray, viz.

℞	Mentholis	gr. v–xxx
	Alboleni liquidi	ʒi

℞	Mentholis	gr. xiv
	Camphoræ	gr. xiv
	Chloreton	gr. v
	Olei cinnamomi	♏iii
	Paraffini liquidi	ʒi

(Thomson.)

℞	Creosoti	ʒi
	Olei picis liquidæ	gtt. xx
	Alboleni liquidi	ʒss (Kyle.)

Ballenger, after cleansing the larynx, insufflates powdered saccharated suprarenal gland, gr. iii–vi, and after a few minutes, instils with a laryngeal syringe the following:

℞	Mentholis	gr. xv–ccxxv
	Olei amygdalæ dulcis	ʒviiss
	Vitelli ovorum	ʒvi ♏xv
	Orthoformi	ʒiii gr. viiss
	Aquæ destillatæ, q.s. ad	ʒiii ʒi

Misce et fiat emulsio.

When insufflating powder, have the patient first take a deep breath, and then exhale after the powder has been blown in. When syringing the larynx, have the patient hold his own tongue, and employ good illumination. Instruct the patient to take a long breath, and then say a prolonged *E*, during which the fluid is injected against the vocal cords. At the conclusion of the treatment the patient should close his mouth and take deep breaths through the nose, in order to avoid laryngeal spasm.

The patient may wear a perforated zinc inhaler containing a sponge moistened with the following:

℞ Acidi carbolici..... ℥ii
Creosoti..... ℥ii
Tincturæ iodi..... ℥i
Spiritus ætheris..... ℥i
Spiritus chloroformi..... ℥ii

M. Sig.—Six to eight drops on the inhaler every hour. (D. R. Lees.)

For laryngeal cough and irritation are recommended lozenges; ℞ Mentholis, gr. $\frac{1}{8}$; ext. glycerrhizæ, gr. ii; ℞ Mentholis, gr. $\frac{1}{20}$; acidi carbolici, gr. $\frac{1}{4}$. (St. Clair Thomson.)

To mitigate the pain of swallowing, the patient may lie prone upon a couch and suck his nourishment through a glass tube from a cup on the floor; or, cocaine, $\frac{1}{2}$ to 4 per cent., may be sprayed, or orthoform or anæsthesin, gr. iii–v, may be insufflated, one hour before the taking of food.

Injection of the laryngeal nerves with alcohol is of the greatest value for the relief of pain. B. A. Vanderhoof's technique is as follows: With the patient recumbent and the head slightly thrown back so as to put the neck muscles on a stretch, press with the finger nail just above the upper edge of the thyroid cartilage and about three centimetres from the incisura thyroidæ. If the finger nail is directly over the nerve, there will be a sensation of pain. Sterilize the skin with iodine, pick it up between the thumb and forefinger, and insert a sterile, dull, hypodermic needle, with syringe attached, containing 2 c.c. of a 50 per cent. solution of alcohol. Insert the needle with a slow pushing and twisting movement, and after it has passed through the skin, slowly push it 1.5 cm. perpendicularly to the skin and move the point slowly around in all directions until the patient complains of a sharp pain in the ear or sometimes in the jaw. Inject the solution slowly, taking about five minutes to inject the whole amount, and at the same time move the point of the needle about a little in all directions. After withdrawing the needle, seal the puncture with flexible collodion.

Fungating masses may be cut off with punch forceps and the curette; ulcers may be cauterized every one to three weeks (waiting each time for the slough to separate), by means of an acid applicator with lactic acid, 60 per cent., or a combination of formaline, 7 per cent., pure carbolic acid, 10 per cent., and lactic acid, 50 per cent. (Lake); or chromic acid fused on the end of a probe (first warm the probe, dip it in the chromic acid, then warm the part of the probe next beyond the crystals until the latter melt); or best of all, the galvanocautery (all employed under cocaine anæsthesia, 10 per cent., repeatedly applied).

St. Clair Thomson uses, for tuberculous deposits as well as for ulcers, a fine-pointed electrode, "brought almost to a white heat," and "firmly thrust through the diseased area until its arrest shows that healthy tissue has been reached." "Several cauterizations are carried out at one sitting, which is repeated every ten to twenty days until complete healing takes place." Suspension laryngoscopy, by means of the Killian-Lynch apparatus, affords easy approach to the larynx.

Tumors of the Larynx.—L. *tu'mor*, from *tu'mere*, to swell; Gr. λάρυγξ. Benign tumors, while uncommon, are commoner than malignant tumors. First in frequency is papilloma; then comes fibroma; rarer growths are cystoma, myxoma, angioma, lipoma, adenoma, lymphoma, chondroma, osteoma, thyroid gland tumor, and amyloid tumor.

Malignant tumors are, first in frequency, epithelioma, rarely medullary or encephaloid cancer, glandular cancer, or sarcoma.

Laryngeal neoplasms are almost always supraglottic, and are usually situated upon the vocal bands. The most frequent variety, papilloma, is usually single and non-recurrent in adults, but multiple and recurrent in children.

Treatment.—A. Benign Tumors.—Symptomless growths may best be let alone. To remove a growth, first cleanse the throat and larynx with an alkaline spray, say Dobell's solution (see Part 11), and then spray into the larynx a 4 per cent. solution of cocaine muriate, and mop the uvula, pillars, posterior pharyngeal wall and epiglottis with the same solution. The head being steadied by a nurse, have the patient hold out the tongue with a napkin, or have an assistant, in case the epiglottis is in the way, use an Escat epiglottis lifter. Train the patient to use the vowel sound *A*, changing to *E* without moving the tongue. The *A* changing to *E* brings the cords on the highest plane possible, and gives the best view of them in their fullest extent. Then without dropping the cords and in the *E* emission, at the command "Now," the patient should be taught to take a deep breath suddenly without making any sound or body movement, and with complete relaxation. At that instant the laryngeal serrated forceps (Mackenzie's,

Dundas Grant's, etc.) are introduced and the growth is grasped and avulsed. This applies to subglottic growths and those on the border of the cords. Growths situated on the upper surface are removed during the *E* emission (after E. H. Curtis.)

Suspension laryngoscopy, however, by means of the Killian-Lynch apparatus, affords easier approach to the larynx, especially in children.

After the operation, absolute rest of the voice should be observed until healing occurs.

An intra-laryngeal spray of absolute alcohol, repeated "several times daily" (Richardson), or "at intervals of ten days" (Kyle), may possibly cause papillomatous growths to atrophy, and may also prevent their recurrence.

Kyle says that papillomata in children may be made to disappear by not using the voice for from one to three weeks. Papillomata have been successfully treated with radium (*q.v.* in Part 1).

B. Malignant Tumors.—Radical operative procedures include thyrotomy or laryngo-fissure, partial laryngectomy, subhyoid or transhyoid pharyngotomy, and complete laryngectomy with the insertion of a Braun's artificial larynx.

Palliative measures in inoperable cases embrace (1) strict cleanliness of the teeth and mouth; (2) the use of antiseptic, alkaline sprays and irrigations (permanganate sprays, 2 per cent., to lessen the disagreeable odor), followed by the insufflation of an antiseptic powder, iodoform, aristol, europhen, etc. (see Tuberculosis of the Larynx, for formulæ and technique); (3) for the relief of pain, orthoform insufflations, cocaine sprays, 5 to 10 per cent., and morphine; (4) for hemorrhage, adrenalin, 1 : 2000 to 1 : 1000; (5) lozenges of formaline (gr. $\frac{1}{8}$), carbolic acid (gr. $\frac{1}{4}$), or menthol (gr. $\frac{1}{20}$), or the latter two combined; (6) removal of obstructive tissue with the galvanocautery, snare, or forceps; (7) low tracheotomy; (8) gastrostomy; (9) radium; (10) the X-rays (*q.v.* in Part 1). Diathermy, by means of a powerful high-frequency current, should be of great value (see Diathermy in Part 1).

Tumors of the Naso-pharynx and Pharynx.—L. *tu'mor*, from *tu'mere*, to swell; *na'sus*, nose; Gr. *φάρυγξ*. **A. Benign Tumors of the Naso-pharynx.**—These are rare. Papillomata, adenomata, cysts, and polypi (the latter originate in the maxillary antrum) are usually removable, under cocaine anæsthesia, 5 per cent., by means of a cold wire snare introduced through the nose aided with the left forefinger in the post-nasal space; or by means of the post-nasal forceps or adenoid curette. In using the wire snare, do not cut through the pedicle of the growth, but grasp it firmly with the snare and avulse the pedicle.

Naso-pharyngeal fibroma is a very rare, hard, vascular, usually small based, progressively growing neoplasm of serious import, which usually undergoes spontaneous involution at about the age of twenty-three years. The treatment is radical removal, (consult the standard textbooks). Diathermy (*q.v.* in Part 1) may be applicable.

B. Benign Tumors of the Tonsils and Pharynx.—These are also rare. They embrace papilloma, adenoma, fibroma, lipoma, angioma, dermoid cyst, and mixed tumor. Pedunculated growths may be removed with forceps and scissors; encysted growths by incision down to the cyst and enucleation; angiomata by incising beyond the growth to avoid hemorrhage. Diathermy should prove of value.

C. Malignant Tumors.—Sarcoma and carcinoma demand thorough removal, if feasible. In inoperable sarcoma, give arsenic (see Part 11).

Palliative measures in inoperable cases embrace (1) strict cleanliness of the teeth and mouth; (2) the use of alkaline, antiseptic mouth washes, such as Dobell's solution (Part 11); (3) lozenges of formalin (gr. $\frac{1}{8}$), carbolic acid (gr. $\frac{1}{4}$), menthol (gr. $\frac{1}{20}$), the latter two combined, or iodoform; (4) for hemorrhage, adrenalin 1 : 2000 to 1 : 1000; (5) for pain, orthoform insufflations, cocaine sprays, 5 to 10 per cent., and morphine; (6) local applications of arsenous acid (1 : 150 to 1 : 50) in water and alcohol, aa, to retard growth; (7) tracheotomy; (8) gastrostomy; (9) radium; (10) the X-rays.

Diathermy is of value.

Tumors of the Pharynx.—See Tumors of the Naso-pharynx and Pharynx.

Tonsils.—See Tumors of the Naso-pharynx and Pharynx.

Trachea.—See Obstruction of the Trachea, in Part 1.

Ulcerative Tonsillitis.—L. *ul'cus*, ulcer. See Tonsillitis Acuta.

Ulcers of the Pharynx.—See Pharyngeal Ulcers.

Uvula, Edema of the.—See Uvulitis Acuta et Œdema Uvulæ.

Elongation of the.—See Elongation of the Uvula.

Uvula, Inflammation of the.—L. *inflamma're*, to set on fire. See Uvulitis.

Œdema of the.—See Uvulitis Acuta et Œdema Uvulæ, below.

Uvulitis Acuta et Œdema Uvulæ.—L. *u'vula*, little grape + Gr. *-ιτις* inflammation; *οἴδημα* swelling; L. *acu'tus*, sharp. **Etiology.**—Traumatism; very hot or otherwise irritating ingesta; excessive vocal effort; neighboring inflammation; digestive disorders; profound anæmia; debility; rickets; nephritis.

Treatment.—Open the bowels with castor-oil or powdered calomel followed by a saline (see Part 11). Keep the parts cleansed with hot alkaline, antiseptic lotions, as given under Pharyngitis Acuta. Spray the parts occasionally with ice water, or an aqueous solution of tannic acid, gr. iii–v ad ℥i, or of copper sulphate, gr. i–iii ad ℥i; or prescribe the following gargle:

℞ Tincturæ kino,
Tr. catechu compositæ,
Glyceriti acidi tannici, aa..... ℥i

M. Sig.—Teaspoonful in a half glass of cold water as a gargle.

If necessary, the engorged tissues may be depleted by means of from ten to twenty punctures.

Vincent's Angina.—See Tonsillitis Acuta.

Vocal Cords, Paralysis of the.—L. *vocal'is*, from *vox*, voice; Gr. *χορδή* cord; *παρά* beside + *λύειν* to loosen. See Aphonia.

Spasm of the.—Gr. *σπασμός*. See Neuroses of the Larynx, and Laryngismus Stridulus.

Voice Fatigue.—See Speech Defects.

Loss of.—See Aphonia.

Weak.—See Speech Defects.

APPENDIX

For Schema for the Nose and Throat History and Examination, see appendix to Part 8 on Nose Diseases.

The Throat Armamentarium.—1. Office and Operating Room Equipment.—Straight back revolving chair with adjustable back and head rest; two piano stools; table cabinet; swinging fountain cuspidor; cupboard for sterile goods; Rochester sterilizer for dressings; instrument sterilizer (fish kettle); kerosene, gas (argand burner), or 50 candlepower electric lamp; Mackenzie condenser; folding portable lamp for laryngoscopy, etc.; head-mirror with Gleason's black leather head-band; sink with foot-lever spigots; Kirstein head lamp; Champion or Little Wonder pump for furnishing compressed air for atomizers; Pynchon and Hubbard regulating air tanks; light concentrator with reflector; suspension laryngoscopy apparatus; X-ray machine; electricity; galvanic, faradic, static.

Bristle probang; cold wire snare; post-nasal forceps; Moe's gum-elastic forceps; Gottstein's adenoid curettes, various sizes and curves; Heath's modification of Mackenzie's guillotine, various sizes; Roe's lingual tonsillotome; Roe's laryngeal dilator; Mackenzie's lateral forceps; post-nasal syringe; fountain syringe, glass or metal; catheter attached to rubber bulb; mouth-gag; combined mouth-gag and tongue depressor; pharyngeal scissors; Escat epiglottis lifter; tonsil forceps; tonsil hæmostat; Robertson's tonsil scissors, two pairs; laryngeal lancet; Sajous's laryngeal forceps applicator; Krause-Heryng laryngeal forceps; Schroetter's laryngeal dilator; tracheo-bronchoscopes and accessories; direct laryngoscopes and accessories, Killian-Brüning; œsophagoscopes and accessories; Jarvis needle; Paquelin cautery; galvanocautery with various knives; indirect laryngoscopes, full set; rhinoscopic and laryngoscopic mirrors, various sizes; laryngeal sound; eustachian catheter; tongue depressor; Kirstein's instruments for autoscopic operations; tonsil knives, compressor, and punches; Kirkpatrick's lingual tonsil scissors; laryngeal curette; laryngeal electrode; O'Dwyer's intubation set; tracheotomy instruments: blunt retractor, sharp tenaculum, sharp and probe-pointed scalpels, tracheal dilator, tracheotomy tube with pilot; Braun's artificial larynx; dilating intubation tubes or T-shaped tracheotomy tubes for laryngeal stenosis; Koenig's long tracheotomy cannula; intratracheal syringe; palate retractor, self-retaining; Whistler's cutting laryngeal curette; umbrella probang; coin catcher; œsophageal bougie; intralaryngeal punch; antitoxin syringes; perforated zinc inhaler; Mackenzie's laryngeal tube-forceps; Laborde's dilator; Roe's tracheal forceps; Golding-Bird's double retractor; scalpels; Fauvel's forceps, lateral grasp and antero-posterior grasp; acid applicator; laryngeal serrated forceps, Mackenzie's, Dundas, Grant's, etc.; Bond's forceps; Dennis's syringe; E. Mayer's curette; camel's-hair brushes; sterile cotton; post-nasal syringe; laryngeal knife; Hartmann's ear forceps; forceps for temporarily clamping the two pillars of the fauces together; hæmostatic forceps with one blade against the tonsillar bed and the other outside; artery forceps; Michel's hooks with special instruments; long curved needles; curved, blunt-pointed scissors; curved tonsil scissors; wire snare; tonsil cutting hook; laryngeal brush; ice-bag; hot water bag; laryngeal spray; stomach tube.

2. Internal Drugs Mentioned in the Text.—(a) ALTERATIVES, STOMACHICS, AND TONICS.—L. *al'tero*, I change; *to'nus*, tone. Arsenious acid; Fowler's solution; tr. ferri chloridi; elixir ferri, quininæ, et strychninæ phosphati; Blaud's pills; syr. ferri iodidi; Basham's mixture; strychnine; potassium iodide; protoiodide of mercury; elix. hypophosphites; quinine bromide; dilute hydrochloric acid; pepsin or papain; inf. quassia; phosphorus; bromine; codliver oil; maltine; dilute nitric acid.

(b) NEUROMUSCULAR SEDATIVES.—L. *sedo*, I allay. Morphine; codeine; heroin; Dover's powder; atropine; tr. belladonna; chloretone; chloral; potassium or sodium bromide; brandy; spt. ætheris; spt. chloroformi; chloroform; ether; phenacetin; salophen; antipyrine; paregoric; aspirin; ammonium bromide; ammonium or zinc valerianate; liq. ext. of grindelia; pearls of amyl nitrite.

(c) DIAPHORETICS.—Gr. *διά* through + *φορεῖν* to carry. Pilocarpine, hypo. tablets, gr. $\frac{1}{8}$; pilocarpine, granular effervescent tablets, gr. $\frac{1}{100}$; sodium salicylate; salol; aspirin; tr. aconiti; aconitin.

(d) PURGATIVES.—L. *purga're*, to cleanse. Castor-oil; calomel; pulv. rhei; sodium sulphate; sodium phosphate; Rochelle salt.

(e) HÆMOSTATICS.—Gr. αἷμα blood + στατικός standing. Fl. ext. hydrastis; calcium chloride.

(f) EXPECTORANTS AND RESPIRATORY ANTISEPTICS.—L. *ex.* out + *pec'tus*, breast. Ammonium chloride; ammonium carbonate; ol. eucalypti; tr. eucalypti; tr. and comp. tr. benzoin; ext. pini canadensis; guaiacol; guaiacol carbonate; ammoniated tincture of guaiacum; guaiaci resina; ol. pini sylvestris; ol. santali; creosote; oil of tar; comp. elixir of terpene hydrate (Llewellyn's); wine or syrup of ipecac; syr. tolutani; terebene; cubebs; syr. of squills; apomorphine; sodium benzoate; potassium chlorate; smelling salts.

(g) ANTILITHICS.—Gr. ἀντί against + λίθος stone. Lithium carbonate; colchicum; granular effervescent citrate of lithium; Vichy tablets.

(h) ANTITOXINES AND SERA—Gr. ἀντί against + τοξικόν poison, L. *se'rum*, whey. Diphtheria antitoxin; antistreptococcus serum.

(i) MENSTRUA AND FLAVORS.—Comp. tr. lavender; ol. menth. pip.; aq. cinnamomi; spt. menth. pip.; sherry wine; spt. vini rectificati; liq. ext. licorice.

3. Local Preparations Mentioned in the Text.—(a) ANTISEPTICS AND ASTRINGENTS.—Gr. ἀντί against + σήψις putrefaction; L. *ad*, to + *strin'gere*, to bind. Hydrogen peroxide, potassium chlorate; ext. hydrastis (colorless); sodium chloride; borax; sodium bicarbonate; sacchari albi; carbolic acid; comp. tr. catechu; iodoform; aristol; europhen; tr. krameria; tr. myrrh; tr. kino; boroglyceride; formalin; lozenges of formalin, gr. $\frac{1}{8}$, of carbolic acid, gr. $\frac{1}{4}$, of guaiacum, of menthol, gr. $\frac{1}{20}$, of potassium chlorate, of camphor and menthol, of krameria, of catechu, and of red gum, made with "glyco-gelatine" or "fruit paste"; alcohol; resorcin; argyrol; comp. tr. benzoin; silver nitrate; iodine; potassium permanganate; zinc sulphocarbolate; aq. ext. hamamelidis; salicylic acid; tr. iodi; tannic acid; ichthyol; glycerite of tannic acid; carbolized vaseline; zinc sulphate; alumnol; Dobell's solution.

(b) STYPTICS.—Gr. στύφειν to contract. Adrenalin, 1 : 1000; liq. ferri persulphatis; alum; cocaine; antipyrine.

(c) CAUSTICS.—Gr. καίειν to burn. Silver nitrate; chromic acid; lactic acid; zinc chloride; trichloracetic acid; copper sulphate.

(d) MUCOUS MEMBRANE STIMULANTS.—Thymol; ol. eucalypti; oil of mustard; ol. gaultheria; ol. menth. pip.; ol. cinnamomi; lozenges of ammonium chloride; lozenges of guaiacum; ol. cassiæ; camphor; menthol; ol. santali; ol. pini sylvestris; tr. and comp. tr. benzoin.

(e) EMOLLIENTS AND MENSTRUA.—L. *emollio*, I soften. Glycerine; liquid albolene; benzoinol; cosmoline; liquid vaseline; parolein; olive oil; sweet almond oil; lanolin; petrolatum molle; refined or crude petroleum.

(f) LOCAL ANODYNES.—Gr. ἀν without + ὀδύνη pain. Cocaine; orthoform; anæsthesin, ethyl chloride.

(g) COUNTER IRRITANTS.—Mustard; turpentine; ung. capsici; camphorated oil; soap liniment.

PART 10

ORTHOPÆDICS

Abduction of the Great Toe.—L. *ab*, from + *du'cere*, to draw. See Hallux Valgus.

Abscess of the Ankle.—L. *absces'sus*, a going apart. See Ankle Joint and Tarsal Tuberculosis.

Brodie's.—See Osteomyelitis.

Buttock.—See Pott's Disease.

Dorsal.—L. *dor'sum*, back. See under Pott's Disease.

Elbow.—See Elbow Tuberculosis.

Hip.—See Hip Disease.

Knee.—See Knee Tuberculosis.

Lumbar.—L. *lum'bus*, loin. See under Pott's Disease.

Post-Mediastinal.—L. *post*, behind; *me'dia*, middle. See Pott's Disease.

Pott's Disease.—See Pott's Disease.

Psoas.—Gr. *ψόα* loin. See Pott's Disease.

Retropharyngeal.—L. *rétro*, back + Gr. *φάρυγξ*. See Pott's Disease.

Sacro-Iliac.—See Sacro-Iliac Disease.

Shoulder.—See Shoulder Tuberculosis.

Tarsal.—See under Ankle Joint and Tarsal Tuberculosis.

Acetabulum, Fractures of the.—L. "vinegar-cruet," from *ace'tum*, vinegar. See Fractures of the Femoral Neck; and Dislocations of the Hip, Central.

Achillobursitis.—Gr. *'Αχιλλεύς* Achilles + *βύρσα* sac + *-ιτις* inflammation. **Synonyms.**—Retro-calcaneal bursitis; achillodynia.

An inflammatory affection of the bursa situated between the insertion of the tendo Achillis and the os calcis, or sometimes of the bursa between the tendo Achillis and the skin, characterized by local pain, tenderness, and usually swelling.

Etiology.—Traumatism; pressure from the back of the shoe; overuse of the gastrocnemius muscle; gonorrhœa; rheumatism; gout; infectious disease; tuberculosis of the os calcis; exostosis beneath the bursa; concretions within the bursa.

The X-ray (*q.v.* in Part 1) is indispensable for a correct diagnosis.

Treatment.—In acute and subacute cases, employ rest, hot applications, hot air, alternate hot and cold douches, massage, the application of tincture of iodine or the cautery, and compression by adhesive plaster strapping or the application of a plaster bandage. After all sensitiveness has disappeared, the patient may be allowed about with the back of the shoe cut away to avoid pressure, and rubber heels worn. A weak or flat foot should receive attention (see Weak Foot).

In chronic cases, the bursa, thickened tissue, and exostoses should be removed through an incision on the inner side of the tendon. The latter may sometimes be advantageously divided. After the operation, the foot and leg are fixed in a plaster bandage, which is not permanently removed until all pain and tenderness have disappeared.

Achillodynia.—Gr. *'Αχιλλεύς* Achilles + *ὀδύνη* pain. See Achillobursitis.

Achondroplasia.—See Part 1, General Medicine and Surgery.

Acromegaly.—See Part 1, General Medicine and Surgery.

Acromial End of the Clavicle, Dislocations of the.—Gr. *ἄκρον* point + *ὦμος* shoulder. See Dislocations of the Clavicle.

Acromioclavicular Dislocations.—See Dislocations of the Clavicle.

Acromion, Fractures of the.—See Fractures of the Scapula.

Acute Anterior Poliomyelitis.—See Part 1, General Medicine and Surgery.

Infantile Paralysis.—L. *i'nfans*; Gr. *παρά* beside + *λύειν* to loosen. See Anterior Poliomyelitis, Acute, in Part 1.

Poliomyelitis.—See Part 1.

Adolescents' Kyphosis.—L. *adolescéntia*, youth. See under Kyphosis.

Round Back.—See under Kyphosis.

Anatomical Neck of the Humerus, Fractures of the.—Gr. *ἀνά* apart + *τέμνειν* to cut. See Fractures of the Humerus.

Anchylosis.—See Ankylosis.

Ankle, Dislocations of the.—See Dislocations of the Ankle.

Fractures of the.—See Fractures of the Ankle.

Ankle Joint and Tarsal Tuberculosis.—L. *tuber'culum*, nodule; Gr. *ταρσός* tarsus or instep. The affection is usually subacute or chronic, and is characterized by discomfort, stiffness and lameness, later swelling, and eventually deformity, *e.g.*, valgus (eversion) and equinovalgus.

The Prognosis is usually good.

Treatment.—First correct deformity, either (1) by immobilizing the joint for two weeks, in a plaster cast (see Plaster Bandages and Plaster Casts), extending from the ends of the toes (Whitman), or from the base of the toes (Goldthwait, Painter, and Osgood),

A. Treatment of Acute Infectious Arthritis.—The symptoms are pain, swelling, heat, redness, and disability.

(a) Early Painful Stage.—Put the patient to bed on a light diet, open the bowels with calomel, followed by a saline (see Part 11), apply a 25 to 40 per cent. ichthyol ointment, together with compression, and immobilize the joint, using splints, if need be. A light posterior wire splint may be employed; for the hip, a light Thomas hip brace (*q.v.*). Apply heat or cold, as preferred. See that the limbs are kept straight, employing traction (*q.v.* under Fracture) if necessary, especially in inflammation of the hip-joint, in which flexion and adduction of the thigh favors spontaneous dislocation when the joint is suddenly distended with fluid (should this occur, replace the parts as soon as possible, before adhesions and contraction have occurred, employ traction in bed, and later apply a short spica plaster bandage with the hip abducted and extended).

Should the joint become acutely distended, and constitutional symptoms supervene, aspirate the joint. If the fluid withdrawn is seropurulent, the joint should be opened. If it is the knee-joint, make two lateral longitudinal incisions, or else a U-shaped incision, beginning on the side, well above the patella and extending down and across the patellar tendon, dividing the latter, and then up on the opposite side to well above the patella again; turn up the patella and flex the knee. Irrigate the joint with hot normal salt solution (℥i ad Oi), and close the incision, or insert a silk seton, down to but not into the joint, for temporary drainage. (Consult also Wounds, in Part 1). Discontinue drainage as soon as the acute symptoms have subsided, and begin gentle active and passive movements, massage, and hydrotherapy. Good functional results may be expected, if early and free drainage is established; but loss of growth may result in children. In suppurative hip disease, following recovery the thigh should be supported by a splint in extension and abduction in order to prevent displacement.

The primary cause of the arthritis (gonorrhœal urethritis, etc., etc.) should, of course, receive due attention.

(b) After the Subsidence of Acute Symptoms.—For the purpose of promoting the absorption of exudate, employ active hyperæmia for thirty to sixty minutes daily, by means of hot air, at a temperature of about 250° or 300° F. (see Fig. 114; cover the part to be treated with three thicknesses of loose-meshed Turkish towelling; allow the oven to cool before removing the joint); or sand and mud baths, the Paquelin cautery, electric light baths, high frequency cur-

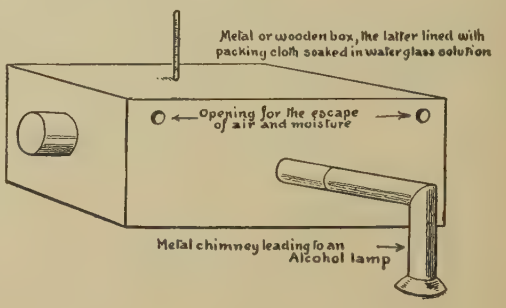

Metal or wooden box, the latter lined with packing cloth soaked in water glass solution
Opening for the escape of air and moisture
Metal chimney leading to an Alcohol lamp

Fig. 114

rents, static electricity (see Medical Electricity in Part 1), alternate hot and cold douches, passive hyperæmia (see under Knee Tuberculosis), and most important of all, functional use.

In cases in which persistent distention of the joint with sero-fibrinous fluid continues, open the joint, irrigate with hot normal saline solution, and close the wound or insert a silk seton for temporary drainage. Resort to active and passive manipulations, massage and hydrotherapy as soon as permissible.

For ankylosis, due to adhesions and thickening of tissues, consult Ankylosis; and also Wounds, in Part 1—Sir Robert Jones's recommendations.

Old dislocations of the hip following suppuration should be treated by Lorenz's method employed in congenital dislocation of the hip.

B. Treatment of Hæmarthrosis.—Employ absolute quiet, immobilization, and gentle compression with the limb elevated, followed after a few days by gentle massage proximal to the joint, but not to the joint itself. If contracture occurs, bring about gradual extension by means of an adjustable splint, or a plaster splint frequently reapplied. For the treatment of the constitutional cause, consult Part 1 on General Medicine and Surgery.

C. Treatment of Neuropathic Arthritis.—In the early stages, with much effusion into the joint, employ weight extension and fixation (see Buck's extension.) Aspirate the joint, if need be. Later employ immobilization and relief from the body weight by means of ambulatory splints. In trophic ulceration, sequestra may have to be removed, or even amputation performed. To prevent

ulceration, etc., all traumatism, due to ill-fitting shoes, etc., should be avoided.

(See Gangrene of the Skin, Part 5, on Skin Diseases, for other causes of apparently spontaneous necrosis.)

In hysteric or neurotic joints, support of the joint (spine, see Neurotic Spine, sacro-iliac joints, see Sacro-iliac Affections, feet and knees), when relaxed, by means of adhesive plaster strapping, plaster-of-Paris or light braces, is often very beneficial. Weak foot (*q.v.*) should be appropriately treated. Good hygiene, rest, exercise, tonics, stomachics, and psychotherapy are important (consult Hysteria, in Part 1).

D. Treatment of Traumatic Synovitis.—Traumatic synovitis is manifested by the effusion of fluid within the joint, which, when in sufficient amount, causes floating of the patella.

Elevate and splint the joint, and apply ice-bags or wet compresses. After the pain has subsided, place a pad of cotton-wool in the popliteal space, draw a close-fitting stocking leg over the knee, strap the joint with circular bands of adhesive plaster as tightly as comfort will permit, and allow the patient up. Renew the strapping as the swelling diminishes, until cured (Whitman). "A simple synovitis should recover in three to six weeks," says H. L. Taylor.

In persistent, intractable synovitis, open the joint, as directed above, irrigate it with hot normal saline solution, ʒi ad Oi, apply tincture of iodine or carbolic acid, and close. As soon thereafter as permissible, employ active and passive movements, massage, hot air, (see above), etc. For troublesome cases, use a supporting brace which limits antero-posterior motion and prevents lateral motion.

For the treatment of hypertrophy of the synovial membrane and villi, consult Villous Arthritis; for loose bodies within the joint, for dislocation of a semilunar cartilage, and for slipping patella, consult the appropriate caption; and for hyperplasia of fatty tissue within the joint, see Lipoma of Joints and Tendon Sheaths.

Arthritis, Atrophic of Children.—Gr. *α* neg. + *τροφή* nourishment. See Still's Disease.

Arthritis Deformans.—Gr. *ἄρθρον* joint + *-ιτις* inflammation; L. *defor'mans*, deforming. Under this caption are included several varieties of joint affection which are possibly separate and distinct diseases.

The onset may be acute, but is much more commonly gradual. The acute cases resemble rheumatic fever, with the difference that in arthritis deformans some permanent change in the joint is left after the acute disturbance has subsided. (T. McCrae.)

Two types of the affection are distinguished, an atrophic type (rheumatoid arthritis), and a hypertrophic type (osteo-arthritis, rheumatic gout, spondylitis deformans (*q.v.*,), morbus coxæ senilis, villous arthritis (*q.v.*), Heberden's nodes or enlargement of the articular ends of the terminal phalanxes of the fingers).

In the atrophic type, which is practically always polyarticular, of insidious onset, and without fever, the important changes are as follows, viz., capsular infiltration, atrophy and erosion of the articular cartilage and bone, with pain and crepitation on motion, tendency to flexion and subluxation deformity, muscular atrophy especially marked in the interossei of the hand, and stiffness of the joints due to muscle spasm, more rarely to ankylosis. The similar affection which occurs before the fifteenth or twentieth year of life is probably Still's disease (*q.v.*).

In the hypertrophic type, which is monarticular or polyarticular, of gradual onset, and usually without constitutional symptoms, the important changes are as follows, viz , hypertrophy of the articular bone and cartilage with resulting pain on motion, often creaking in the joint, impairment of mobility, muscular atrophy, a wearing away of the weight-bearing parts with the formation of osteophytes around the periphery, and sometimes the occurrence in the hip and knee joints of loose bodies consisting of detached pieces of hypertrophied cartilage. Flatulence and constipation are often complained of. Senile coxitis may be marked by sciatic pain.

The diagnosis is much aided by the X-ray (*q.v.* in Part 1).

Etiology.—Depressing physical and mental influences, grief, fear, shock, physical or mental strain, nervous debility, the climacterium, etc., are cited as possible causes of the atrophic form, and occupational or other form of traumatism and exposure as causes of the hypertrophic form.

Since it is possible that infection or toxæmia may be a factor, a careful search should be made for foci of disease, *e.g.*, carious teeth, abscess at the root of a tooth, pyorrhœa alveolaris, tonsillar infection, nasal suppuration, sinusitis, otitis media, bronchitis, cholecystitis, appendicitis, ulcer of the digestive tract, rectal ulceration, dysentery, indigestion, intestinal putrefaction, genito-urinary infection, prostatitis, spermatocystitis, pelvic inflammatory disease, tuberculosis, etc. Defective metabolism may be causative.

Treatment.—A. The Atrophic Type.—Enjoin an out-of-door life, preferably in a dry,

equable climate, such as that of southern California, upper Egypt, or Algiers, frequent bathing, warm clothing frequently changed, woolen socks at night, a dry, well-ventilated house, fresh air at night, avoiding draughts, regular hours of eating and sleeping, rest before and after meals, free bowel activity, systematic exercise of the joints stopping short of fatigue (knitting and piano-playing for the fingers, the use of weights and pulleys for the shoulders, supination and pronation of the forearm, bicycling for the knees, use of the Zander machine, the army setting-up exercises), and finally, an abundant, mixed diet, viz., milk, buttermilk, kifolac, cream, olive or cottonseed or codliver oil, cocoa, eggs, suet puddings, bacon, meats, cereals, fresh green vegetables, plenty of water, etc., but excluding alcohol, sweets, acids, oatmeal, rhubarb, tomatoes, asparagus, and acid fruits. General gentle massage, vibrasage, and oil inunctions, practiced two or three times a week, are very beneficial. Tonics of iron, arsenic, nux vomica, quinine and glycerophosphates may be useful (see Drugs, Part 11). Guaiacol carbonate for a prolonged period is strongly recommended as an intestinal antiseptic, hydrochloric acid for impaired digestion. Guaiacum and sulphur are highly praised. "Potassium iodide, alkalies, salicylates, strenuous bathing, and low diet should be avoided." (–Author–*?*–).

Curtailment of carbohydrates is said to relieve symptoms (Pemberton).

Locally one should employ stimulative measures, *e.g.*, hot saline compresses, hot mud or sand-baths, vapor baths, sun or electric light baths, hot-air baking (350° F. for twenty to thirty minutes, about once a day in severe cases, otherwise two or three times a week, see under Arthritis), alternate hot and cold douches, the Paquelin cautery, high-frequency currents, Bier's hyperæmia (for one hour at a time at first, then rapidly increased to eight, to twelve, to twenty hours; see Knee Tuberculosis), rubber tissue wrapped about the joint, deep massage above the joint, passive movements, and resistance exercises.

Ionization (see Part 1), is recommended. Large pads closely adapted to the joint and attached to the negative pole are used. The electrolytes employed are sodium salicylate, chloride, and iodide, 2 per cent. The current is gradually raised to 30 to 40 to 70, even to 200 milliampères, and is allowed to act for twenty to thirty minutes. The stronger currents should not be repeated oftener than twice weekly, for fear of the production of burns. Chlorine and iodine ions are said to be particularly useful in clearing up ankylosis.

Deformity should be corrected, either at once, under anæsthesia if necessary, using only moderate force, or gradually, by a series of plaster splints as in the correction of congenital club-foot (*q.v.*). Tenotomy and the genuclast are sometimes required. After the deformity has been corrected, the joint should be fixed in plaster of Paris (*q.v.*) according to Goldthwait, Painter, and Osgood, for a week or longer, but T. McCrae says that passive movements should be resorted to within twenty-four hours. A caliper splint or a split plaster splint should be worn during the day, with crutches, if necessary, and a split plaster splint at night, until the deformity no longer tends to recur. The stimulative measures enumerated above should not be neglected.

To aid in the painless mobilization of stiff joints, one may inject sterile oil. If all other measures fail, one may introduce into the joint a flap of fat and fascia (Murphy), etc. (see Ankylosis), or excise the joint. Hypertrophied villi sometimes require removal.

All active treatment should be withheld in the presence of local heat and swelling. In these acute phases, the patient should be put to bed and the joints supported with cotton and splints. Relief may be afforded by the application of cold or hot wet compresses, mustard poultices, tincture of iodine, guaiacol, one part, and tincture of iodine, six parts; oil of wintergreen; oil of wintergreen, ten parts, spirits of menthol, five parts, and elastic collodion, five parts; alcohol, iodine-vasogen, or unguentum iodi, unguentum capsici (see Part 11); a 20 per cent. alcoholic solution of salicylic acid containing a few drops of chloroform, chloroform liniment, the Paquelin cautery, or repeated small blisters (see Part 11). Internal analgesics include aspirin, pyramidon, phenacetin, antipyrine, guaiacol carbonate, codeine, and ether by inhalation for fifteen minutes.

Faithful treatment, pursued over a long period of time, can be expected to produce material improvement and sometimes a cure results.

B. The Hypertrophic Type.—The treatment is in every respect the same as that of the atrophic type, with the important exception that the joints should be adequately protected against friction, pressure, strain, and other forms of trauma, including passive movements, by fixation in plaster or leather splints, with the object of promoting the absorption of hypertrophied bone and cartilage. For the hands, one may employ "stout and loosely fitting kid gloves reinforced on

their palmar surface by light steels" (Goldthwait, Painter, and Osgood); for the hip-joint, a Thomas walking caliper splint; for the spine, a plaster jacket or brace (see Spondylitis Deformans). Flat-foot, if present, should be corrected (see Weak Foot). In senile coxitis, after preliminary traction in bed, (see Buck's Extension), to reduce deformity, a short spica is applied and the patient gotten up on crutches, or else a hip-splint, jointed at the knee, employed. In extreme cases, Albee's operation to produce ankylosis is justifiable, for the relief of pain. Osteotomy is sometimes required to correct deformity where there is firm ankylosis.

The disease shows a tendency to self-limitation which is favored by protective treatment. The latter serves to prevent the occurrence of acute symptoms and conserves mobility.

Arthritis Deformans of the Spine, Hypertrophic.—See Spondylitis Deformans.

Gonorrhœal—Gr. *γονή* semen + *ῥεῖν* to flow. See Arthritis.

Hæmophiliac.—Gr. *αἷμα* blood + *φιλεῖν* to love. See Arthritis.

Infectious, Acute.—L. *infec'tio.* See Arthritis.

Chronic.—See Arthritis Deformans.

Still's.—See Still's Disease.

Neuropathic.—Gr. *νεῦρον* nerve + *πάθος* disease. See Arthritis.

Pneumococcus.—Gr. *πνεύμων* lung + *κόκκος* berry. See Arthritis.

Purulent.—L. *pus, pur'is,* pus. See Arthritis.

Rheumatoid.—Gr. *ῥεῦμα* flux + *εἶδος* form. See Arthritis Deformans.

Still's.—See Still's Disease.

Suppurative.—L. *sub,* under + *pus, pur'is,* pus. See Arthritis.

Toxic.—Gr. *τοξικόν* poison. See Arthritis.

Traumatic.—Gr. *τραῦμα* wound. See Under Arthritis.

Villous.—See Villous Arthritis.

Astragalus, Fractures of the.—L.; Gr. *ἀστράγαλος* die. See Fractures of the Tarsal Bones.

Atrophic Arthritis of Children.—Gr. *α* neg. + *τροφή* nourishment. See Still's Disease.

Type of Arthritis Deformans.—See Arthritis Deformans.

Backache. See Part 1, General Medicine and Surgery.

Back, Hump.—See Kyphosis.

Knee.—See Genu Recurvatum.

Round.—See Kyphosis.

Stiff.—See Stiff Back.

Bandages, Plaster, How to Prepare.—See Plaster Bandages, How to Prepare.

Bandaging.

Barton's Bandage.—Figure-of-8 of the jaw and occiput. Start the bandage behind the right ear, carry it obliquely forward across the top of the head, down the left side of the face in front of the ear, under the chin, up the right side of the face in front of the ear, obliquely backward across the top of the head over the left parietal bone, under the occiput around to and

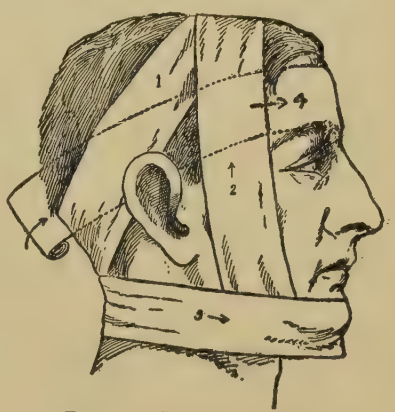


Fig. 115.—Barton's Bandage

across the front of the chin, horizontally around the neck and to the starting point behind the right ear. Repeat these turns and insert pins at the junction points. (See Fig. 115).

Four-Tailed Bandage to the Chin.—Place

Fig. 116.—Four-tailed bandage to the chin.

the centre of the bandage (Fig. 116) to the chin; bring the two under tails up over the top of the head well forward and tie them there tightly; then bring the two upper tails back and tie them tightly over the lambda; then tie these two knots together.

Velpeau's Bandage.—Place the palm of the hand upon the opposite shoulder, with cotton interposed between opposing skin

surfaces. Start the bandage posteriorly at the axilla of the sound side, carry it obliquely upward across the back to and over the shoulder of the injured side, down the front, around the elbow, up the back to and over the shoulder of the injured side, across the front of the chest, around the sound side internal to the arm, straight around the back to and around (including) the arm of the injured side low down straight across the front of the chest around to the back again, then obliquely across the back to the shoulder, and repeat from the beginning, each vertical turn overlapping the preceding and approaching the neck, and each horizontal turn ascending. Pin the turns where they cross each other. (See Fig. 117).

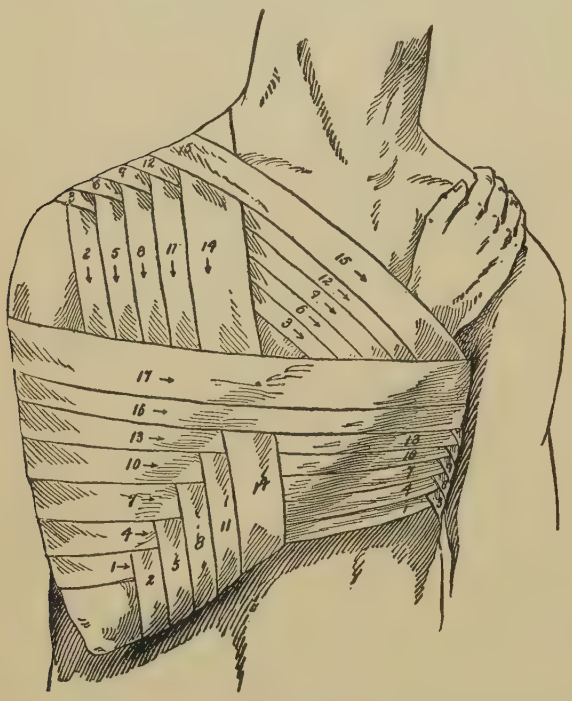


Fig. 117.—Velpeau modifier. (Dulbs.)

Beck's Paste.—See Part 11.

Bed-Sore; Decubitus. See Part 1, General Medicine and Surgery.

Bennet's Fracture.—See Fractures of the Metacarpal Bones.

Bier's Passive Hyperæmia.—Gr. *ὑπέρ* over + *αἷμα* blood. See Part 1.

Bone Diseases. See Part 1.

Bowed or Flexed Scapula.—See under Round Shoulders.

Bow-Leg; Genu Varum.—L. *gen'u*, knee; *var'um*, bent. Outward bending of the knee, or rather, of the leg below the knee.

Causes.—Rickets; epiphyseal injury or disease; œteomyelitis; osteitis deformans; osteomalacia. Anterior bow-leg may be due to hereditary syphilis as well as to rickets.

Treatment.—In slight cases in children under three years of age, attempt to correct the deformity by pressing the legs gently together, with the ankles together, for ten minutes or longer twice daily. In more advanced cases, employ a short brace for deformity below the knee, and a long brace for deformity at the knee (see Fig. 118).

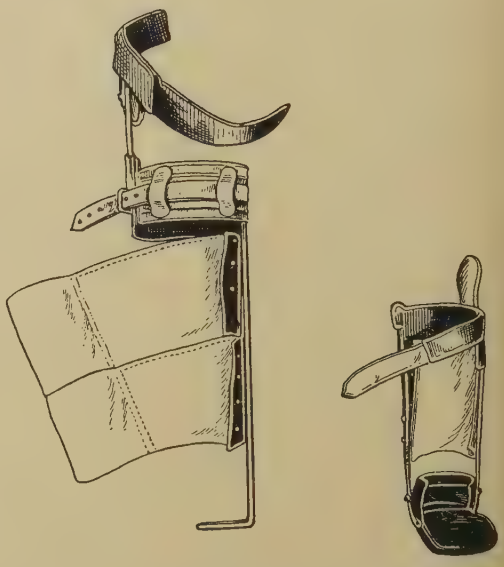


Fig. 118.—The short (Knight) and the long (Napier) bow-leg braces.

In children over four years of age, one must resort to osteoclasis (see Figs. 119 and 120), or linear osteotomy (at the concavity of the curve). The deformity should be over-

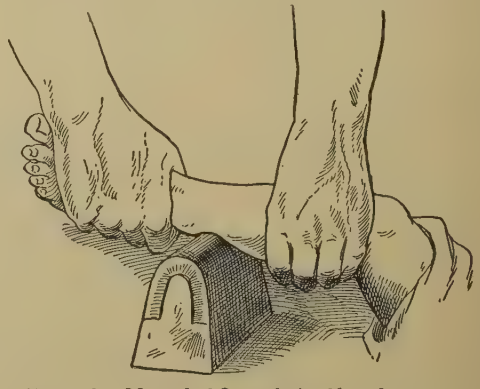


Fig. 119.—Manual of Osteoclasis of bow-leg over wooden wedge.

corrected, and the limb then fixed in plaster (*q.v.*) extending from the toes to the trochanter. At the end of three weeks, the plaster may be removed in order to see if the position of the limb is correct. If it is

Fig. 120.—Grattan osteoclast.

not, it should be corrected. Fixation should be continued for eight weeks.

Anterior bow-leg calls for osteoclasis or posterior osteotomy, with division of the tendo Achillis, if necessary.

Brachial Plexus Paralysis. See Part 1, General Medicine and Surgery.

Breast, Chicken.—See Pigeon-Breast.

Funnel.—See Funnel-Chest.

Pigeon.—See Pigeon-Breast.

Brodie's Abscess.—L. *absces'sus,* a going apart. See Osteomyelitis, in Part 1.

Bryant's Line.—See Fractures of the Hip.

Buck's Extension.—See Fractures of the Femur.

Bunion.—See Hallux Valgus.

Bursitis.—L.; Gr. *βύρσα* a sac or pouch + *-ιτις* inflammation. Inflammation of a bursa, due to trauma or sepsis.

More than a thousand bursæ are present throughout the body, but the following are the most important from a pathological standpoint:

Prepatellar bursa, involvement of which is commonly known as housemaid's knee.

Pretibial bursa, situated beneath the ligamentum patellæ. Enlargement on either side of the ligamentum patellæ may be due to pretibial bursitis or to hypertrophied synovial fringes.

Superficial pretibial or pretubercular bursa. Fracture of the tubercle should be excluded by means of the X-ray (*q.v.* in Part 1).

Popliteal bursa, situated in the popliteal space beneath the tendon of the semimembranosus and that of the inner head of the gastrocnemius.

Gluteal bursa, any one of the three bursæ beneath the gluteus maximum muscle.

Iliopsoas bursa.

Calcaneal bursa (see Painful Heel.)

Achillar or retro-calcaneal bursa (see Achillobursitis).

Subdeltoid or subacromial bursa, inflammation of which causes local pain and limitation of rotation and abduction of the arm. Droop shoulder (*q.v.*) may be a cause, from the rubbing and pressure against the tuberosity of the humerus which it is apt to produce.

Subcoracoid or coracobrachialis bursa, inflammation of which causes limitation of rotation. Droop-shoulder (*q.v.*) may also be a cause here.

Subscapular bursa.

Bursa above the elbow.

The X-ray may give valuable information, as in cases complicated by the deposition of lime salts.

Treatment.—In early or acute cases, with effusion, employ rest, hot water bags, baking (see under Arthritis), or the cautery, or the application of tincture of iodine or blisters, or strapping, or aspiration. P. G. Skillern, Jr., praises the use of a blister in the early stages. "A square inch of fabric buttered with ceratum cantharides, U.S.P., or an equal area of a 'ready-to-use' plaster, is moistened with olive oil and applied over the inflamed part. It is covered with a dossil of gauze, which is secured by adhesive. The books say to remove the plaster in four to six hours, but practically it works out that as soon as the blister has formed, the cushion of serum interposed between medicament and dermis automatically inhibits its vesication. For this reason the blister is removed the next day and a dressing of boric ointment on surgical lint applied. Immobilization is now secured."

The occurrence of suppuration demands free incision and drainage.

In subdeltoid and subcoracoid bursitis, active and passive movements (the latter under anæsthesia, if necessary) and massage may be required to overcome subsequent stiffness due to adhesions. When free mobility has been accomplished, the scapulæ should be strapped together with adhesive plaster for several days, and then active and passive movements resumed until normal

mobility is assured. Droop-shoulder (*q.v.*) should be corrected. In inveterate subcoracoid cases, it may be necessary to remove the tip of the coracoid process.

In chronic, intractable bursitis the sac should be removed.

Buttock Abscess.—L. *absces'sus*, a going apart. See Pott's Disease.

Calcaneobursitis.—L. *calcan'eum*, heel-bone; *bur'sa*, sac. See Painful Heel.

Calcaneus.—See Talipes Calcaneus.

Carpal Bones, Dislocations of the.—L. *car'pus*; Gr. καρπός wrist. See Dislocations of the Wrist.

Fractures of the.—See Fractures of the Carpal Bones.

Tuberculosis.—See Tuberculosis of the Wrist.

Carpometacarpal Joints, Dislocations of the.—Gr. μετά beyond. See Dislocations of the Wrist.

Cartilage, Semilunar, Displacement of a.—See Semilunar Cartilage, Displacement of a.

Casts, Plaster, How to Prepare.—See Plaster Casts, How to Prepare.

Cavus.—(See Hollow or Contracted Foot.

Central Dislocation of the Hip.—L. *cen'trum*, centre. See Dislocations of the Hip.

Cerebral Paralysis of Children.—L. *cer'ebrum*, brain; Gr. παρά beside + λύειν to loosen. The paralysis is of the spastic type. It may involve only one side of the body (hemiplegia, from Gr. ἡμι — half + πλήγη stroke), like parts on both sides (diplegia, from Gr. δίς twice), or the lower extremities alone (paraplegia, from Gr. παρά across). Mental deficiency and epilepsy are common accompaniments.

Etiology.—Birth traumatism or asphyxiation; hydrocephalus; maternal disease during pregnancy; marantic conditions; "defective development of the motor tract, often associated with premature birth"; syphilis; chronic meningitis; infectious diseases; fright.

The underlying lesion may be embolism, thrombosis, hemorrhage, or encephalitis, followed by atrophy, softening, cyst formation, or sclerosis.

Treatment.—In mild cases, taken early, practice systematic massage and manipulation to the normal limits in all directions, and train the muscles by purposive movements. A jointed leg brace attached to a pelvic band may be used for a time to hold the limb in a symmetrical position.

Perform tenotomies for the correction of contracture—subcutaneous division of the tendo Achillis at the ankle; division of the hamstrings at the knee by an open incision; division of the adductor tendons at the hip by an open incision or subcutaneously; detachment of the tensor vaginæ femoris from the crest of the ilium; division of the plantar fascia.

The tibialis anticus tendon may be split and its outer half attached to the outer border of the foot. The flexor wrist or knee tendons may be transplanted to the extensors.

After performing tenotomy, apply a plaster spica bandage (*q.v.*), with the hips extended and abducted, the limb rotated outward, the knees extended, and the ankles flexed at a right angle. Retain the cast for at least six weeks. The patient may walk about in it if it is not too heavy.

Employ massage and active and passive exercises in the after treatment.

"Relapse to some extent may occur, but very great permanent improvement is the rule, not only in walking, but in general and intellectual improvement," particularly in hemiplegics, who are not apt to show the congenital mental deficiency characteristic of the diplegic and paraplegic. (After R. W. Lovett.)

(For the immediate treatment of intracranial hemorrhage of the new-born, consult Part 1.)

Cervical Vertebræ, Dislocations of the.—L. *cer'vix*, neck; *ver'tebra*, vertebra. See Dislocations of the Spine.

Charcot's Disease.—See under Arthritis.

Chest, Chicken.—See Chicken Breast.

Flat.—The treatment is that of Round Shoulders (*q.v.*)

Funnel.—See Funnel-Chest.

Pigeon.—See Chicken-Breast.

Chicken-Breast; Pigeon-Breast.—**Causes.**—Adenoids, enlarged tonsils, and other causes of respiratory obstruction; rickets; dorsal Pott's disease; paralysis of the muscles of the trunk.

Treatment.—Attend to the cause. To correct the deformity, employ deep-breathing exercises and exercises involving hanging by the arms. In extreme cases one may exert pressure by means of a pad in front attached to a back brace.

The tendency in simple pigeon-chest is toward spontaneous cure; it is rarely seen in adult life.

Chondrodystrophia.—Gr. χόνδρος cartilage + δυς- ill + τροφή nutrition. See Achondroplasia, in Part 1.

Clavicle, Dislocations of the.—See Dislocations of the Clavicle.

Fractures of the.—See Fractures of the Clavicle.

Claw-Foot.—See Hollow or Contracted Foot.

Clicking Knee in Babies.—See Snapping or Clicking Knee in Babies.

Club-Foot; Talipes Equinovarus.—L. *tal'ipes,* club-foot; *eq'uus,* horse; *var'us,* bent inward. In the equinovarus posture, the heel is elevated, the sole inverted, and the front part of the foot adducted.

Club foot is either congenital (rarely paralytic, due to spina bifida), or acquired.

The causes of acquired club foot are as follows: paralysis of the anterior leg muscles, due to acute anterior poliomyelitis, spastic paralysis, neuritis, hereditary ataxia, progressive muscular atrophy of the peroneal type, pseudo-hypertrophic paralysis, tabes dorsalis, or traumatism; fracture; cicatricial contraction on the inner side of the foot and leg; ankle-joint disease (tuberculosis, arthritis deformans, etc.); shortening of the leg following injury or disease; spasm of the tibial muscles; long confinement in bed; hysteria.

The prognosis is good under careful treatment.

A. Treatment of Congenital Club-Foot.—Commence treatment when the infant is two or three weeks old. Very slight cases may possibly be cured by gentle manipulation, practiced two or three times a day, first correcting inversion and adduction, then plantar flexion, in an attempt to overcorrect the deformity. When this can be accomplished easily, and the patient has reached the age of two months (H. L. Taylor), apply plaster-of-Paris over cotton (see Plaster Casts). Remove the plaster at the end of two or three weeks, and reapply it, if necessary.

In most cases, however, manipulation does not wholly correct the deformity. Then the foot must be gradually unfolded by successive plaster splints, renewed once a week, correcting first the varus, later the equinus. The plaster splint is applied as follows: The foot, leg, and lower thigh are bathed with soap and water, thoroughly dried and powdered, or else painted with Heusner's glue (alcohol, 50 c.c., benzine, 25 c.c., resin, 50 gm., Venice turpentine, 5 gm. Fiske), pledgets of cotton are inserted between the toes, a band of cotton is placed about the toes, and a long, smooth-fitting stocking is drawn over the foot, leg, and thigh. Over the sole is placed a foot-board held by adhesive (Ridlon). The knee is then flexed at a right angle, and the foot gently drawn outward until resistance is encountered. A light plaster bandage extending above the knee is now smoothly applied, and rubbed until it is firm. This is removed each week, the leg cleansed, massaged, and powdered, and a new bandage applied, with the foot each time further corrected, until an attitude of exaggerated abduction is obtained. Four to six treatments should ordinarily correct adduction and inversion; and, in three or four months from the beginning of treatment, complete dorsal flexion should be attained. "See that the heel descends as the forefoot is pushed up." (Whitman).

Fig. 121.—C. F. Taylor's long club-foot splint, with Pelvic Band for outward rotation of the foot.

In some cases the tendo Achillis and even the posterior ligament of the ankle may have to be divided. Fixation in plaster for three or more weeks is then required.

The foot should be supported in the overcorrected position, until the child begins to walk, by means of a strip of adhesive plaster passed under the sole and up the outer border of the leg, or by means of a cast stopping below the knee, or a brace. The Taylor club foot brace is used

when the child walks; and if the foot turns in in walking, its upright is extended and attached to a pelvic band (see Fig. 121). The outer border of the sole of the shoe should be a little thicker than the inner. Several times daily the foot should be massaged and moved to its normal limits in all directions, and any inward rotation of the leg on the thigh or the thigh on the hip that may be present should be corrected by massage and stretching.

Daily massage and manipulation, and, if necessary, a brace, may have to be continued for a long time, and the patient should be kept under observation indefinitely.

Some use metal splints instead of plaster in the correction of club foot.

In cases not treated or not corrected until the child has learned to walk, it is probably best to correct the deformity at once by modelling over Kœnig's wedge-block with the subcutaneous division of the Achilles and posterior tibial tendons, and if necessary, the internal lateral ligament and plantar fascia. A plaster cast is then applied, with the deformity overcorrected and the knee flexed, and after about ten days or more, the patient is allowed to walk in plaster boots, and he need not be seen again, says Ridlon, until the boots are worn through, which may not be for four months. "Some children are cured with one set of boots; some must have them changed from time to time and wear them for eighteen months, and some cases must have the plaster casts carried above the bent knees until on removal the feet do not spring back into varus" (Ridlon). In infants who can not be seen often enough to carry out the gradual treatment, for instance with those who live at a distance, Ridlon delays treatment until the child has learned to walk, and then employs the operative treatment above described.

In some cases the astragalus must be removed to prevent relapse.

In any case to prevent relapse, it is necessary to hold the foot straight by means of the plaster boot until it remains straight (Ridlon).

B. Treatment of Acquired Equino-Varus.—Overcorrect the deformity under anæsthesia by forcible manipulation and modelling over Kœnig's wedge-block, dividing contracted parts, if necessary, and retain in the overcorrected position for three weeks, or if the tendo Achillis has been divided, two months or longer. Then employ a Taylor or similar club-foot brace.

Astragalectomy, cuneiform osteotomy, tendon transplantation (in cases of over two years duration), and arthrodesis (in those over eight years of age) are sometimes required (consult the standard textbooks).

Club-Hand.—A congenital deformity, sometimes due to absence or deficient formation of the radius or ulna.

Treatment.—Correct the deformity by manipulation, with the division or transplantation of tendons, if necessary; then retain in an overcorrected position by a plaster cast for three weeks or longer, followed by massage and muscle training. Bony defects call for special operative measures. (Consult the standard textbooks.)

Colles's Fracture.—See Fractures of the Radius, the Lower End.

Compound Fractures.—See General Considerations, under Fractures.

Condyle, External, Fractures of the.—L. *con'dylus;* Gr. κόνδυλος knuckle. See Fractures of the Elbow.

Internal, Fractures of the.—See Fractures of the Elbow.

Congenital Contraction of the Fingers.—L. *con,* together + *gen'itus,* born; *contrac'tio,* shortening. Correct the deformity by manipulation and splinting, or by a plastic operation on the skin and fascia.

Congenital Dislocation of the Hip.—The dislocation is usually posterior, or according to Ridlon, directly upward. Unilateral dislocation is manifested by a limp, in which the body lunges toward the affected or short side, prominence and elevation of the trochanter (above Nélaton's line, see Hip Disease), flattening of the buttock, abnormal mobility, and shortening.

Bilateral dislocation is manifested by a waddling gait, lordosis, flattening of the buttocks, separation of the thighs and apparent widening of the pelvis.

In the rare anterior dislocation, the symptoms are much less marked in degree.

Treatment.—Ridlon does not attempt reduction before the shortening amounts to an inch. To do so, he says, is to court disaster. His bloodless method of replacement, modified from Lorenz, is as follows: Under complete anæsthesia, with the pelvis elevated about three inches upon folded sheets or a sandbag, and an assistant holding the abducted opposite thigh down upon the table, the operator flexes the dislocated thigh, with the knee flexed, until, with the fingers of the other hand on the head, neck and greater trochanter of the opposite femur, and the thumb in front of the empty acetabulum, he can feel the femoral head at the lower part of the acetabulum. He then rotates the thigh inward and abducts, when

the head should rise upward (forward) and slips into the acetabular socket. When reduction is accomplished the thigh lies flexed, abducted, and rotated outward, each at an angle of 90 degrees, so that the outer side of the thigh lies on the table. Then the operator proceeds to ascertain in what position of the thigh the replacement is the most secure, and the limb is fixed by means of a plaster-cast (*q.v.*) in this position.

The cast should be one-half inch thick around the hip and body and one-quarter inch thick on the limb.

If the thigh is outwardly rotated the cast need not go below the knee; but if the thigh is not rotated, the knee should be flexed to 90 degrees and the cast carried below the knee.

If but one side is involved and the cast extends only to the knee, the child should walk in two weeks; if both hips have been replaced, in two months; and the child should continue to walk in the same cast for eight months.

If the cast extends below the knee, it should be cut off at the end of two or three months, so that the child can walk, which is essential.

Ridlon believes that all cutting operations (arthrotomy, osteotomy of the femur, excavation of the acetabulum, etc.) except to ankylose the hip, are "not only unnecessary but harmful." He also says that "it is not necessary to use weight-and-pulling traction" before the bloodless method of reduction.

Congenital Dislocation of the Shoulder.—Consult Whitman's Orthæpedic Surgery.

Congenital Elevation of the Scapula.—Correct the deformity in childhood. Through an open incision divide the muscles which are holding the scapula elevated, *e.g.*, all the muscles attached to the vertebral border and spine of the scapula. In some cases the scapula is joined to the spine by a bony bridge, which should be resected. Draw down the scapula as far as possible. No subsequent fixation is necessary. After three or four weeks employ active and passive exercises and massage.

Congenital Flexion of the Knee.—In mild cases, employ daily stretching. Severe cases may require tenotomy of the hamstrings and forcible stretching, with fixation in a plaster splint (*q.v.*) for three weeks or longer.

Contracted Foot.—See Hollow or Contracted Foot.

Contraction of the Fingers, Congenital.—See Congenital Contraction of the Fingers.

Contraction of the Fingers, Dupuytren's.—See Dupuytren's Contraction of the Fingers.

Coracobrachial Bursitis.—Gr. κορακός crow; βραχίων arm. See Bursitis.

Coxalgia.—L. *cox'a*, hip + Gr. ἄλγος pain. See Hip Tuberculosis.

Coxa Vara.—L. *cox'a*, hip; *var'a*, bent inward. Depression of the neck of the femur with resulting elevation of the trochanter above Nélaton's line (*q.v.*, under Hip Tuberculosis). The deformity is manifested by limping, discomfort, adduction and outward rotation of the thigh, limitation of flexion, of internal rotation and of abduction, and apparent and actual (see under Hip Tuberc.)

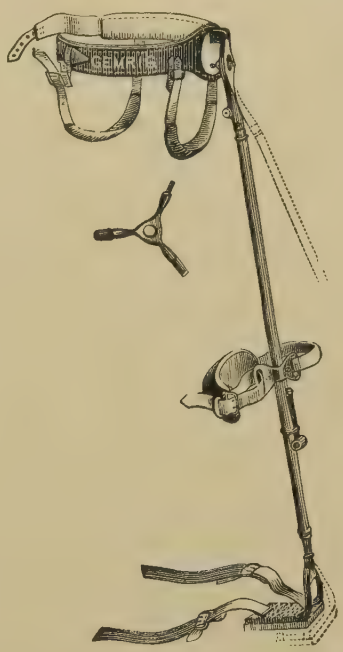


Fig. 122.—Long Taylor hip splint with perineal straps and foot plate attachable by buckles to adhesive plaster strips applied to leg.

shortening, due to elevation of the trochanter.

Etiology.—The condition is rarely congenital. Rickets is the commonest cause of bilateral cases; fracture or epiphyseal separation is the commonest cause of unilateral cases.

Trauma, long standing, overweight, and strain are exciting causes.

Treatment.—Prescribe a tonic regimen, *e.g.*, fresh air day and night, general massage, a daily tepid bath followed by a cool spinal douche, a nonrachitic, nutritious diet at regular intervals, and care of the bowels, etc. (See Rickets, in Part 1.)

In progressive bilateral cases in young children, the patient should be kept in a

reclining posture, and not allowed to sit, stand, or walk for two or three months. An attempt should be made to bend the neck of the femur into the proper angle with the shaft by forcible abduction and inward rotation under anæsthesia. When this has been accomplished, a plaster spica (*q.v.*) is applied with the limb in extreme abduction and rotation inward. After two months the plaster is removed, massage and exercises are employed, and a Taylor hip-splint is worn for two or three months longer.

Recent traumatic cases are treated in the same way.

In very early unilateral cases, one may employ a Taylor convalescent hip-splint (Fig. 122) or a Judson perineal crutch, to take the weight off the limb, crutches and a high shoe being worn on the sound side, and practice massage and forcible abduction, outward rotation and extension, continued at least a year.

In old cases (not before the fifth year of age), subtrochanteric osteotomy, linear or cuneiform, is required. A long plaster spica, including the foot, is then applied, with the limb in extreme abduction. This is removed after two months and replaced by a protective splint for three months longer, followed by massage, exercises, horseback and bicycle riding, and manipulation (Whitman).

Coxitis, Senile.—L. *cox'a* hip + Gr. *-ιτις* inflammation; L. *senil'is*, senile. See Arthritis Deformans.

Tuberculous.—L. *cox'a*, hip + Gr. *-ιτις* inflammation. See Hip Tuberculosis.

Crucial Ligaments of the Knee, Rupture of the.—L. *crux*, cross. See under Displacement of a Semilunar Cartilage,

Curvature, Anterior, of the Spine.—See Lordosis.

Dorsal, of the Spine.—See Kyphosis.

Lateral, of the Spine.—See Scoliosis.

Dactylitis Syphilitica.—Gr. *δάκτυλος* finger + *-ιτις* inflammation. Syphilitic infection of the phalangeal bones is characterized by a fusiform or spindle-shaped swelling, pain, and tenderness, and must be distinguished from tuberculosis, which presents the same local symptoms.

Treatment.—Secure absolute rest by means of splints, which should be kept on for months. Resort to surgical measures should suppuration or necrosis occur. Specific constitutional treatment should, of course, be employed (see Syphilis, in Part 1).

Dactylitis Tuberculosa.—(See Tuberculosis of the Long Bones of the Hand and Foot.

Decubitus.—See Bed-Sore, in Part 1.

Delayed Union in Bone Fracture.—See General Considerations, under Fractures.

Deltoid Bursitis.—Gr. *δέλτα* letter Δ + *εἶδος* form. See Bursitis.

Derangement of the Knee Joint, Internal.—See Displacement of a Semilunar Cartilage, Loose Bodies, Lipoma, and Villous Arthritis.

Dislocation, Congenital, of the Hip.—L. *dis-* apart + *loca're*, to place. See Congenital Dislocation of the Hip.

Shoulder.—Consult Whitman's "Orthopædic Surgery."

Paralytic.—See Dislocations, Paralytic.

Pathologic.—See Dislocations, Pathalogical or Spontaneous.

Dislocation, Recurrent, of the Shoulder; Loose Shoulder.—Fit a canvas shoulder-cap to the shoulder and upper arm, and hold it in place by means of bands buckled beneath the other arm and to the trousers.

Resection of the lax capsule may be performed in intractable cases (consult Whitman's "Orthopædic Surgery")

Dislocation, Sacro-Iliac.—See under Sacro-Iliac Strain.

Semilunar Cartilage of the Knee Joint.—See Displacement of a Semilunar Cartilage.

Dislocations of the Acromial End of the Clavicle.—L. *dis-* apart + *loca're*, to place; Gr. *ἄκρον* point; L. *clavic'ula*, little key. See Dislocations of the Clavicle.

Acromioclavicular.—Gr. *ἄκρον* point + L. *clavic'ula*, little key. See Dislocations of the Clavicle.

Dislocations of the Ankle; Tibiotarsal Dislocations.—L. *tib'ia*, shin-bone; *tar'sus*, tarsus. Note that the malleoli are intact.

A. Backward Dislocations.—Under anæsthesia, flex the foot plantarward and pull it forward, while an assistant pushes the lower end of the tibia backward; then flex the foot dorsalward.

In a case of my own, in which manual traction and manipulation under anæsthesia were unsuccessful, I employed traction upon the instep and heel by means of heavy weights, and morphine and chloral (Part 11) as sedatives, and reduction occurred overnight while the patient slept. If reduction has not been effected within ten to fourteen days, arthrotomy may be required.

After reduction, immobilize the ankle for three weeks in a posterior plaster-of-Paris cast (*q.v.*); then commence massage and passive movements, and at the end of the fourth week, active movements.

B. Forward Dislocations.—Under anæsthesia

flex the foot strongly dorsalward, and while an assistant presses the lower end of the tibia forward, press the foot backward and then flex it plantarward. In cases of ten to fourteen days standing, arthrotomy may be required.

After reduction, immobilize the ankle for three weeks in a posterior plaster-of-Paris cast; then commence massage and passive movements, and at the end of the fourth week, active movements.

C. Lateral Dislocations.—One or both malleoli are always fractured. The treatment, after reduction, is that of Pott's fracture (*q.v.*).

Dislocations of the Carpal Bones.—L. *car'pus*, wrist. See Dislocations of the Wrist.

Carpometacarpal Joints.—Gr. μετά after + καρπός wrist. See Dislocations of the Wrist.

Central, of the Hip.—L. *cen'trum*. See Dislocations of the Hip.

Cervical Vertebræ.—L. *cer'vix*, neck; *ver'tebra*, vertebra. See Dislocations of the Spine.

Dislocations of the Clavicle.—L. *dim.* of *clav'is*, key. **A. Forward Dislocation of the Sternal End.**—With the knee between the scapulæ, draw the shoulders backward, while an assistant presses the dislocated bone back in place. Then, after cleansing and drying the parts, place a pad over the end of the bone, and hold it in place with adhesive straps or a figure-of-eight bandage.

B. Upward Dislocation of the Sternal End.—Draw the shoulder outward, while an assistant presses down upon the displaced end. Then, after cleansing and drying the parts, and powdering the axilla, apply adhesive straps and a Velpeau bandage (*q.v.*), with a pad in the axilla.

C. Backward Dislocation of the Sternal End.—Pull the shoulder backward and outward. Arthrotomy may be required.

Recurrent dislocations at the sternal end of the clavicle call for the use of silver or bronze aluminum sutures, or excision of the articular surfaces.

D. Upward Dislocation of the Acromial End (Supra-acromial).—Lift the arm and shoulder upward, while an assistant presses the clavicle downward. Then, after cleansing and drying the parts and powdering the axilla, apply a strip of adhesive plaster from before backward over the acromial end of the clavicle, down around the flexed elbow, and up in front over the clavicle again. Then apply a Velpeau bandage (*q.v.*), with a pad in the axilla.

Some cases require suture with kangaroo tendon, passed through the clavicle and coraco-acromial ligament, or if necessary, the acromion process.

E. Downward and Backward Dislocation at the Acromial End (Subacromial).—With the elbow flexed, pull the shoulder outward, while an assistant pushes the clavicle upward. Then cleanse, dry, and powder the skin, place a pad in the axilla, and apply a Velpeau bandage (*q.v.*).

Dislocations, Congenital, of the Hip.—L. *con*, together + *gen'itus*, born. See Congenital Dislocation of the Hip.

Shoulders.—Consult Whitman's "Orthopædic Surgery."

Dorsal, of the Hip.—L. *dor'sum*, back. See Dislocations of the Hip.

Dislocations of the Elbow.—**A. Backward Dislocation of both Ulna and Radius or of the Ulna Alone.**—The olecranon lies above the transverse line joining the condyles.

Under anæsthesia, supinate and hyperextend the forearm, and exert traction until the forearm can be normally flexed; or with the knee pressing backward the lower end of the humerus, slowly flex the forearm until reduction is effected (Cooper's method).

After reduction, cleanse, dry, and powder the skin, pad the flexure of the elbow, and immobilize the latter in a position of acute flexion. At the end of two weeks, commence massage and passive movements for ten or fifteen minutes twice daily. At the end of four weeks, discard the splint, and allow active motion.

B. Lateral Dislocations of both Ulna and Radius.—Under anæsthesia, exert traction upon the hyperextended forearm, at the same time pressing inward or outward, as the case may be, upon the displaced bones; then flex the forearm. Arthrotomy is cometimes required.

After reduction, treat as before described for backward dislocation.

C. Forward Dislocation of both Ulna and Radius.—Draw the upper end of the forearm downward and backward.

After reduction, treat as directed for backward dislocation.

D. Divergent Dislocation of the Ulna and Radius.—Reduce each bone separately, the ulna by hyperextension and traction, and the radius by pressure.

After reduction, treat as directed for backward dislocation.

E. Dislocation of the Radius Alone.—Exert traction, and press the head of the radius back into place. Then immobilize the elbow as directed for backward dislocation of both ulna and radius.

Arthrotomy is sometimes required, and occasionally resection of the head.

In subluxation of the radius in young children, due to pulling upon the forearm, supinate the forearm until a click indicates that the bone is reduced.

Old dislocations of the elbow require arthrotomy.

Dislocations of the Fibula, the Upper End.—Employ direct pressure.

Dislocations of the Fingers at the Interphalangeal Joints.—L. *inter*, between + Gr. φάλαγξ phalanx. Exert traction and pressure upon the base of the dislocated phalanx. Perform arthrotomy as a last resort.

Dislocations of the Fingers at the Metacarpophalangeal Joints.—See Dislocations of the Metacarpophalangeal Joints.

Foot.—See Dislocations of the Ankle.

Hip, Congenital.—L. *con*, together + *gen'itus*, born. See Congenital Dislocation of the Hip.

Dislocations of the Hip, Traumatic.—Gr. τραῦμα wound. **A. Backward or Dorsal Dislocations.**—DIAGNOSIS.—The limb is adducted, flexed, rotated inward (the toes resting upon the instep of the other foot), and shortened, the trochanter lies above Nélaton's line, and the head of the femur may be palpated, during rotation, through the gluteal muscles. Nélaton's line is an imaginary line extending from the anterior superior spine of the ilium to the ischial tuberosity. The top of the great trochanter normally lies at or just below this line. Measure the length of the limbs from the anterior superior spine to the lower border of the malleolus, with the transverse line between the anterior superior spines of the ilium at right angles with the long axis of the body, and the two limbs in the same relative position to the midline of the body. The head and neck of the femur have the same general direction as the internal condyle at the knee.

Exclude the rare impacted fracture of the anterior portion of the neck of the femur, with inversion of the limb.

In very rare instances, in which the Y ligament is torn, the limb is everted.

TREATMENT.—With the patient on the floor, anæsthetized, and an assistant steadying the pelvis by exerting pressure upon the two anterior superior spines, flex the thigh, in the adducted and inverted posture, to a right angle, exert traction upward, and then circumduct the limb outward, and gradually extend it (Bigelow); or, with the patient lying face downward upon a table, with the injured limb hanging straight downward, and an assistant holding the sound limb horizontal, grasp the ankle of the injured limb, flex the knee to a right angle, and rock and rotate the limb until it slips into place. (Stimson).

Keep the patient in bed for three weeks; then commence massage and passive movements for ten to fifteen minutes twice daily, and at the end of four weeks, begin active movements.

If the acetabulum is fractured, Buck's extension (*q.v.*) should be employed for four weeks.

B. Downward and Inward or Thyroid Dislocations.—DIAGNOSIS.—The limb is abducted, flexed, and rotated outward, there is a depression over the trochanter, and the head of the femur may be palpated in its inferior or internal position.

Exclude impacted fracture of the neck of the femur.

TREATMENT.—With the patient on the floor, anæsthetized, and an assistant steadying the pelvis, by exerting pressure upon the two anterior superior spines, flex the thigh, in its abducted and everted posture, to a right angle, exert traction upward, and then circumduct the limb inward, and gradually extend it. (Bigelow.)

Keep the patient in bed for three weeks; then commence massage and passive movements for ten to fifteen minutes twice daily, and at the end of four weeks, active movements.

C. Upward and Forward or Suprapubic Dislocations.—The head of the femur may be palpated in the groin.

TREATMENT.—With the patient on the floor, anæsthetized, and an assistant steadying the pelvis by exerting pressure upon the two anterior superior spines, while another assistant presses upon the head of the femur, exert traction in the axis of the limb as it lies, or abduct it if the head is near the symphysis; then flex the limb, but not to a right angle, and rotate it inward.

Keep the patient in bed for three weeks; then commence massage and passive movements for ten to fifteen minutes twice daily, and active movements at the end of four weeks.

D. Upward or Supracotyloid Dislocations.—The head lies near the anterior superior spine of the ilium, and the limb is extended, adducted, and rotated inward.

TREATMENT.—With the patient on the floor, anæsthetized, and an assistant steadying the pelvis by exerting pressure upon the two anterior superior spines, flex the limb moderately, and exert traction, while an

assistant presses the head of the femur downward and backward.

Keep the patient in bed for three weeks; then commence massage and passive movements, and active movements at the end of four weeks.

E. Downward or Infracotyloid Dislocations.—The head lies just below the acetabulum, and can not be palpated; the limb is markedly flexed and adducted.

TREATMENT.—With the patient on the floor, anæsthetized, and an assistant steadying the pelvis by exerting pressure upon the two anterior superior spines, rotate the limb, exert traction, and extend.

Keep the patient in bed three weeks; then commence massage and passive movements, and active movements at the end of four weeks.

F. Central Dislocations through the Acetabulum.—The limb is rotated outward, the trochanter approaches the anterior superior spine of the ilium, and the head of the femur can be felt per rectum.

TREATMENT.—With the patient on the floor anæsthetized, and an assistant steadying the pelvis by exerting pressure upon the two anterior superior spines, pull the head of the femur out of the pelvis. Employ Buck's extension (*q.v.*) for six weeks.

Arthrotomy is indicated if the head has penetrated deeply into the pelvis.

Old dislocations of the hip require arthrotomy.

Dislocations of the Humerus.—L. *hu'merus.* See Dislocations of the Shoulder.

Inferior Maxilla.—L. lower jaw. See Dislocations of the Lower Jaw.

Infracotyloid, of the Hip.—L. *infra-* beneath + Gr. κοτυλός cup + εἶδος form. See Dislocations of the Hip.

Interphalangeal Joints of the Fingers.—See Dislocations of the Fingers at the Interphalangeal Joints.

Jaw, Lower.—See Dislocations of the Lower Jaw.

Dislocations of the Knee.—The tibia may be dislocated forward, backward, or to either side.

Under anæsthesia, flex the thigh, and exert traction upon the leg.

Immobilize the knee upon a posterior splint for three weeks; then commence massage and passive movements for ten to fifteen minutes twice daily, and active movements at the end of four weeks.

Dislocations of the Lower Jaw.—The jaw is practically always dislocated forward, usually bilaterally.

With the thumbs (covered with cloth) over the molar teeth, and the fingers grasping the jaw from the outside, exert backward and downward pressure with the thumbs, and lift up the chin with the fingers; or depress the chin, under an anæsthetic, in order to relax the lateral ligament, and then press directly backward. (Scudder.)

After reduction, immobilize the jaw with a four-tailed or a Barton bandage (see Bandaging) for two weeks, and feed only with liquids.

Long-standing and recurrent cases sometimes demand arthrotomy, with suture of the meniscus to the periosteum, or sometimes, resection of the condyle.

Dislocations of the Lower Radio-Ulnar Joint.—L. *rad'ius,* spoke; *ul'na,* ulna. See Dislocations of the Wrist.

Maxilla, Lower.—L. *maxil'la,* jaw. See Dislocations of the Lower Jaw.

Dislocations of the Metacarpophalangeal Joints.—Gr. μετά after + καρπός wrist + φάλαγξ phalanx. **A. Backward Dislocation of the Thumb.**—Exert traction upon the hyperextended thumb. Then, while maintaining traction, press, or have an assistant press, the base of the first phalanx forward, and quickly flex the thumb.

If reduction can not be thus effected, perform a palmar arthrotomy.

In old cases, the head of the metacarpal bone may have to be resected.

B. Forward Dislocation of the Thumb.—Exert traction, flexion, and pressure over the base of the first phalanx.

C. Dislocations of the Fingers at the Metacarpophalangeal Joint.—Exert traction and flexion and press upon the base of the first phalanx.

Dislocations of the Neck.—See Dislocations of the Spine.

Dislocations of the Patella.—L. *patel'la,* pan. Flex the thigh on the abdomen, and extend the knee, in order to relax the quadriceps femoris muscle, then press the bone back into place.

Operative reduction is sometimes required.

Habitual dislocation requires operative treatment.

Dislocations, Paralytic.—Such dislocations are rare.

I. Paralytic Dislocation of the Hip.—Interference may not be advisable, except, perhaps, a supporting apparatus for the leg and compensation of the shortening.

If deemed of advantage, however, the head of the femur may be replaced, under ether, and a plaster spica applied holding the limb in abduction, as described under Congenital Dislocation of the Hip; or the contracted muscles may be divided through an open incision, the capsule folded and stitched,

or a portion excised, and the head replaced; or artificial ankylosis may be secured.

II. Paralytic Dislocation of the Shoulder.—Incise the joint, shorten the capsule, and employ a slip of a sound muscle (pectoralis major, trapezius, etc.) as a support to the humerus; or secure ankylosis.

Dislocations, Pathological or Spontaneous.—Gr. *πάθος* disease + *λόγος* discourse; L. *sponta'neus*, voluntary. **Causes.**—Joint distention, occurring in typhoid fever, pyæmia, gonorrhœa, pneumonia, diphtheria, smallpox, influenza, scarlet fever, measles; joint destruction, occurring in tuberculous arthritis, acute osteomyelitis, carcinoma, sarcoma; joint deformity, occurring in locomotor ataxia, syringomyelia, arthritis deformans; paralysis, occurring in anterior poliomyelitis (see above).

Dislocations of the Peronæi Tendons.—See Whitman's Orthopædic Surgery.

Radio-Carpal Joint.—L. *rad'ius*, spoke + *car'pus*, wrist. See Dislocations of the Wrist.

Radio-Ulnar Joint.—L. *rad'ius*, spoke + *ul'na*. See Dislocations of the Wrist.

Radius at the Elbow.—L. *rad'ius*, spoke. See Dislocations of the Elbow.

Dislocations of the Ribs.—Reduce the dislocation by pressure. Then, after cleansing, shaving, and drying the skin, apply from below upward, while the patient is exhaling deeply, several broad overlapping adhesive plaster swathes, extending from beyond the spine in back to beyond the sternum in front. Overlap each swathe two-thirds. Cover the nipple with gauze, or cut the adhesive away over the nipple. Cleanse and powder the axilla. An adhesive strap may be passed over the shoulder with advantage.

Change the adhesive swathes at least every seven days for about three or four weeks.

Dislocations, Sacro-Iliac.—See under Sacro-Iliac Strain.

Semilunar Cartilage of the Knee-Joint.—See Displacement of a Semilunar Cartilage.

Dislocations of the Shoulder.—The capsule is torn at its inner and lower portions.

The signs of shoulder dislocations are as follows: flattening of the shoulder below the acromion, which is unduly prominent; hollow tension of the deltoid; abduction of the elbow; changed direction of the long axis of the humerus; inability to bring the hand to the opposite shoulder, unless the capsule is very much torn; detection of the head of the humerus just below the coracoid process in the common subcoracoid dislocation, just below the outer end of the clavicle in subclavicular dislocation, and in the axilla in subglenoid dislocation. In the latter two varieties of dislocation the arm is sometimes fixed in a position of horizontal abduction.

In the very rare subacromial and subspinal dislocations, the posterior wall of the capsule is ruptured, the arm is adducted, and the head of the humerus can be palpated behind and below the acromion or the spine of the scapula.

Treatment.—Under anæsthesia, with the patient supine, grasp the limb above the condyles of the humerus and at the wrist. With the forearm flexed at a right angle, press the limb against the side of the chest. Now slowly rotate the arm firmly outward the arm being still close to the chest, and, with the arm still rotated outward, adduct it across the middle line of the chest, at the same time raising the elbow as high as possible. Then rotate the arm inward until the hand touches the opposite shoulder. (Kocher.)

If Kocher's method is unsuccessful, employ traction downward and outward until the arm is abducted horizontally from the body (counter-traction being made by means of a folded sheet around the chest); then exert upward pressure upon the head in the axilla, and gradually adduct the limb.

Gradual traction by means of heavy weights may be employed. The patient is suspended, lying horizontally on his side, in a canvas stretcher, with his arm hanging vertically through a slit in the canvas, and a weight attached to the wrist. (Stimson.)

Arthrotomy is a measure of last resort. It is best deferred for ten to fourteen days.

After having reduced the dislocation, cleanse, dry, and powder the skin, pad the axilla and elbow, and apply a Velpeau bandage (*q.v.*).

At the end of a week employ a sling, and begin massage and passive movements for ten to fifteen minutes twice daily. At the end of four weeks discard the sling and permit active movements.

Old and recurrent dislocations are best treated by arthrotomy.

Dislocations of the Spine.—It is practically always the cervical vertebræ that are dislocated. The dislocation is usually unilateral, the articular process of the affected vertebra slipping forward or backward over the one below. In a unilateral complete dislocation, in which the articular process

above lies in the hollow (intervertebral notch) in front of the articular process below, the head is rotated to the opposite side and bent over to the dislocated side, and the sterno-mastoid muscle is lax on the dislocated side and stretched and tense on the opposite side. In an incomplete unilateral dislocation, in which the articular process becomes caught on top of the one below, the head is both rotated and bent over to the opposite side.

Treatment.—Under deep anæsthesia, with an assistant exerting countertraction upon the shoulders, employ, in unilateral forward dislocations, traction, lateral flexion toward the nondislocated side, and rotation backward on the dislocated side. The dislocation may sometimes be sneezed back into place.

In bilateral forward dislocations, employ slight extension, and backward pressure on the dislocated vertebra, or forward pressure on the vertebra below; or free one articular process at a time as in unilateral dislocation.

Avoid increasing flexion or forward displacement. Remember that sudden death has occurred during attempts at reduction, and so warn the family.

If manual manipulation is unsuccessful, try immobilization with plaster-of-Paris and extension; or operate.

After reduction, immobilize the neck, by means of a plaster-of-Paris or other form of stiff collar, for two weeks; then practice massage for fifteen minutes twice daily, and continue the use of the splint for another two weeks.

Dislocations, Spontaneous.—See Dislocations, Pathological.

Sternal End of the Clavicle.—L.; Gr. *στέρνος* breast-bone. See Dislocations of the Clavicle.

Subacromial, of the Clavicle.—L. *sub-* under; Gr. *ἄκρον* point + *ὦμος* shoulder. See Dislocations of the Clavicle.

Shoulder.—See Dislocations of the Shoulder.

Dislocations, Subastragaloid.—L. *sub-* under + Gr. *ἀστράγαλος* die + *εἶδος* form.

A. Inward Dislocation.—Under anæsthesia, increase the existing adduction, then press upon the side of the astragalus, and upon the inner side of the foot below the astragalus, and abduct the foot.

After reduction, immobilize the foot upon a posterior plaster-of-Paris cast for three weeks; then begin massage and passive movements, and at the end of the fourth week, active movements.

If reduction has not been effected within ten to fourteen days, excision of the astragalus may be required.

B. Outward Dislocation.—Under anæsthesia, increase the existing abduction, then press upon the inner side of the astragalus, and upon the outer side of the foot below the astragalus, and adduct the foot.

Excision of the astragalus is sometimes required in cases of ten to fourteen days duration.

After reduction, treat as directed for inward dislocation.

C. Backward Dislocation.—Under anæsthesia, increase the existing plantar flexion, then flex the foot strongly dorsalward, while counter pressure is made upon the astragalus.

Excision of the astragalus is sometimes required in cases of ten to fourteen days duration.

After reduction, treat as directed for inward dislocation.

D. Forward Dislocation.—Under anæsthesia, flex the foot dorsalward. Excision of the astragalus may be required in cases of ten to fourteen days duration. After reduction, treat as directed for inward dislocation.

Dislocations, Subclavicular, of the Shoulder.—L. *sub-* under + *clavĭcula*, little key. See Dislocations of the Shoulder.

Subcoracoid, of the Shoulder.—L. *sub*, under + Gr. *κορακοειδής* crow-like. See Dislocations of the Shoulder.

Subglenoid, of the Shoulder.—L. *sub-* under + Gr. *γλήνη* cavity + *εἶδος* form. See Dislocations of the Shoulder.

Subspinous, of the Shoulder.—L. *sub-* under + *spin'a*, spine. See Dislocations of the Shoulder.

Supra-acromial, of the Clavicle.—L. *sup'ra*, above + Gr. *ἄκρον* point + *ὦμος* shoulder. See Dislocations of the Clavicle.

Dislocations, Supracotyloid, of the Hip.—L. *sup'ra*, above + Gr. *κοτυλο-ιδες* cup-shaped. See Dislocations of the Hip.

Suprapubic, of the Hip.—L. *sup'ra*, above + *pub'es*, pubic bone. See Dislocations of the Hip.

Thumb.—See Dislocations of the Metacarpophalangeal Joints.

Tibiotarsal.—L. *tib'ia*, shin bone + *tar'sus*, tarsus. See Dislocations of the Ankle.

Ulna at the Elbow.—L. *ul'na*. See Dislocations of the Elbow.

Ulno-radial Joint, Lower.—See Dislocations of the Wrist.

Upper End of the Fibula.—Employ direct pressure.

Vertebræ.—L. *ver'tebra*. See Dislocations of the Spine.

Dislocations of the Wrist.—**A. Dislocations of the Lower Radio-ulnar Joint.**—Reduce the dislocation by pressure upon the dislocated bone (radius or ulna), and counter pressure upon the other bone.

B. Dislocations of the Radiocarpal Joint (Backward or Forward).—Exert traction upon the hand and counter traction upon the forearm, and press the displaced carpus into place.

C. Dislocations of the Carpal Bones.—In dislocations between the two rows of carpal bones, exert traction upon the hand, and pressure upon the distal row, and flex or extend the hand as the case may be.

In anterior dislocation of the semilunar bone, with or without fracture of the scaphoid, have an assistant press firmly upon the palmar surface of the bone with his thumbs, while the hand is hyperextended and then hyperflexed over the assistant's thumbs.

If the dislocation is irreducible, the bone, together with part or whole of a fractured scaphoid, if necessary, should be excised.

D. Dislocations of the Carpometacarpal Joints.—Exert traction upon the hand and press upon the base of the dislocated metacarpal bone.

Displacement of the Peronei Tendons.—Consult Whitman's "Orthopædic Surgery."

Displacement of a Semilunar Cartilage.—L. *sem'i*-half + *luña*, moon; *cartila'go*, gristle. The knee is fixed in slight flexion.

The dislocation is caused by a sudden rotation of the tibia outward on the femur while the leg is slightly flexed, as in throwing a ball.

Treatment.—With the patient upon his back, and thigh flexed, flex the leg as far as possible, abduct it on the femur, rotate it inward, and then suddenly extend it, at the same time pressing upon the displaced cartilage (the inner one). An anæsthetic may be used, if necessary Reduction is indicated by the ability freely to extend the knee.

Sir Robert Jones prefers the following method of reduction: The patient lies upon his back with the thigh flexed on the body and the leg on the thigh, and the physician holding the leg. At the command, "One, two, three, kick!" the patient extends the limb as suddenly as possible. At the same time the physician "rotates the foot inward and pulls while pressure is placed on the thigh." After reduction has been accomplished, the knee is surrounded by cotton-wool, and then firmly bandaged and fixed on a posterior knee splint, or immobilized in plaster, from ankle to perineum.

At the end of about ten days, he may be allowed to walk in the splint, or with the knee bandaged, but should be very careful not to bend the knee suddenly. The inner side of the sole and heel should be raised to help prevent recurrence. Daily massage and gentle exercise of the quadriceps muscle should be employed, and active flexion of the joint should be practiced very gradually. Should effusion occur, strap the knee as described under Traumatic Synovitis (see under Arthritis).

Forward mobility of the tibia while extended, and backward mobility while fully flexed, indicates elongation or rupture of the anterior and posterior crucial ligaments respectively. The treatment in such cases is prolonged fixation of the knee in extension (Sir Robert Jones), say for four weeks or longer, or until the torn ligaments have had time to heal.

Fracture of the spine of the tibia is diagnosed by means of the X-ray. The treatment is fixation in extension for four weeks or longer. If extension, however, is impossible, the detached spine should be removed by an incision at the side of the patella or by splitting the patella longitudinally, and the knee then fixed in extension.

For recurrent displacements of the semilunar cartilage, removal of the cartilage is indicated. The skin is shaved, scrubbed with hot water and soap, rinsed, and protected with sterile gauze the day before the operation. At operation, an Esmarch bandage is applied in order to avoid swabbing, the patient is drawn down to the edge of the table, so that the leg, flexed to a right angle at the knee, hangs dependent (Jones). The gauze is then removed, the skin prepared with iodine, and sterile sheets arranged. Jones wraps the knee in sterile gauze soaked in biniodide solution, makes his incision through the gauze, and clips the edges of the gauze over the skin edges to the superficial fascia. He then uses a second clean knife for the deeper dissections. The incision is made over the anterior end of the inner semilunar cartilage, curving slightly downwards and inwards—that is, nearly, but not quite, parallel to the upper edge of the tibia (Fig. 123), for about an inch and a half, taking great care not to extend it so far as to cut any fibres of the internal lateral ligament (Jones). The joint being opened, the cartilage is divided with the knife into anterior and posterior halves, the anterior half is easily pulled away with forceps, and the posterior half is separated from the capsule and the tibia with scissors and then removed (Whitman). Twist, do not tie, vessels. The synovial membrane is then

closed with fine catgut, Lembert or mattress fashion, and the capsule and other tissues in layers with stronger sutures. The knee is then padded and fixed in extension or slight flexion with a light plaster splint or a simple posterior knee splint. The splint is retained for about two weeks, and then replaced by strapping, "to guard against strain." Massage is now commenced, and the patient is allowed each day to practice

Fig. 123.—Showing position of incision

gradually bending and extending the knee, "until in about three weeks he should reach the full range of movement and walk with freedom." (Jones.)

A brace which limits antero-posterior motion and prevents lateral motion, or the Griffiths brace may be employed in chronic, recurrent cases, but only if operation is refused.

Dorsal Abscess.—L. *dor'sum*, back; *abs·ces'sus*, a going apart. See Pott's Disease.

Curvature of the Spine.—See Kyphosis.

Dislocation of the Hip.—See Dislocations of the Hip.

Flexion of the Foot.—See Talipes Calcaneus.

Droop-Shoulders.—See Round-Shoulders.

Drop-Finger.—See Mallet-Finger.

Dupuytren's Contraction of the Fingers.—A gradual, painless flexion of the little finger, and perhaps the ring finger, rarely others, occurring commonly in adult males, and associated with gout, diabetes, tabes, or occupational traumatism.

A tense band is felt in the palm.

Treatment.—Ionization (*q.v.* in Part 1) with sodium chloride or salicylate, with a milliampèrage of 60 to 80 to 100, for thirty minutes, at first thrice weekly, and later twice and once weekly, is recommended. One may remove all the contracted palmar fascia, if possible, and then fix the fingers in extension for two or three weeks, followed by massage and active and passive movements.

Dupuytren Splint.—See Fractures of the Leg, the Lower End.

Elbow, Dislocations of the.—See Dislocations of the Elbow.

Fractures of the.—See Fractures of the Elbow.

Elbow Tuberculosis.—Tuberculosis of the elbow joint is characterized by swelling, deformity, pain and tenderness, restriction of motion due to muscle spasm, and muscular atrophy.

The Prognosis is usually good, but two years or more of treatment may be required.

Treatment.—If the X-ray (*q.v.* in Part 1) reveals localized foci of infection which do not communicate with the joint, these foci may be removed if deemed advisable.

If the limb, when first seen, is in a faulty attitude, one should attempt to draw it gradually into a position of flexion of slightly less than a right angle, with the forearm midway between pronation and supination, so that if ankylosis occurs, the forearm is in the best position for use.

To this end, a series of plaster splints may be applied about every two weeks, or else the deformity may be reduced at once under anæsthesia.

With the limb in the position above described, apply a plaster bandage (*q.v.*) from the wrist to the axilla, and sling the wrist to the neck beneath the clothing. Remove the cast after six months or longer, and have the patient carry the arm in a sling for several months more, employing at the same time massage and gentle passive movements. Bier's passive hyperæmia may be tried (see under Knee Tuberculosis). For the constitutional treatment of tuberculosis, see Tuberculosis, Pulmonary, in Part 1.

If the disease continues to progress in spite of conservative treatment, perform erasion of the joint in children, excision in the adult.

Treat abscess as described under Hip Tuberculosis and Pott's Disease.

Amputation is indicated only as a life-saving measure in destructive cases.

Elevation of the Scapula, Congenital.—See Congenital Elevation of the Scapula.

Epicondyles of the Humerus, Fractures of the.—Gr. ἐπί upon + κόνδυλος knuckle. See Fractures of the Elbow.

Epiphysis of the Femur, Lower, Separation of the.—Gr. *ἐπί* on + *φύειν* to grow. See Fractures of the Femur, the Shaft.

Upper, Separation of the.—See Fractures of the Femur, the Neck.

Humerus, Lower, Separation of the.—See Fractures of the Elbow.

Upper, Separation of the.—See Fractures of the Humerus.

Radius, Lower, Separation of the.—See Fractures of the Radius, the Lower End.

Equino Valgus.—See Talipes Valgus.

Varus.—See Club-Foot.

Equinus.—See Talipes Equinus.

Extension, Over, of the Knee.—See Genu Recurvatum.

External Condyle, Fractures of the.—See Fractures of the Elbow.

Femur, Dislocations of the.—L. *fe'mur*, thigh. See Dislocations of the Hip.

Fractures of the.—See Fractures of the Femoral Neck, and Fractures of the Femoral Shaft.

Separation of the Lower Epiphysis of the.—See Fractures of the Femoral Shaft.

Upper Epiphysis of the.—See Fractures of the Femoral Neck,

Fetal Osteogenesis Imperfecta.—L. *fœ'tus;* Gr. *ὀστέον* bone + *γεννάν* to beget. See Fragilitas Ossium, in Part 1, General Medicine and Surgery.

Fibula, Dislocations of the Upper End of the.—L. *fib'ula*, buckle. See Dislocations of the Fibula, the Upper End.

Fractures of the Lower End of the.—See Fractures of the Leg, the Lower End.

Upper End of the.—See Fractures of the Leg, the Shaft.

Finger Contraction, Congenital.—See Congenital Contraction of the Fingers.

Dupuytren's.—See Dupuytren's Contraction of the Fingers.

Dislocations at the Interphalangeal Joints.—See Dislocations of the Fingers at the Interphalangeal Joints.

Metacarpophalangeal Joints.—See Dislocations of the Metacarpophalangeal Joints.

Finger, Drop.—See Mallet-Finger.

Dupuytren's Contraction of the.—See Dupuytren's Contraction of the Fingers.

Jerk.—See Trigger-Finger.

Joints, Stiff.—See Stiff Finger Joints.

Finger, Lock.—See Trigger-Finger.

Mallet.—See Mallet-Finger.

Snapping.—See Trigger-Finger.

Stiff.—See Stiff Finger Joints.

Syphilis.—See Dactylitis Syphilitica.

Trigger.—See Trigger-Finger.

Tuberculosis.—See Tuberculosis of the Long Bones of the Hand and Foot.

Flat-Chest.—The treatment is that of round shoulders (*q.v.*).

Foot.—See Weak Foot.

Flexed Scapula.—See under Round Shoulders.

Flexion of the Foot, Dorsal.—L. *flex'io*, bending; *dor'sum*, back. See Talipes Calcaneus.

Plantar.—L. *plan'ta*, sole of the foot. See Talipes Equinus.

Knee, Congenital.—L. *con*, together + *gen'itus*, born. See Congenital Flexion of the Knee.

Foot, Claw.—See Hollow or Contracted Foot.

Club.—See Club-Foot.

Contracted.—See Hollow or Contracted Foot.

Dislocations of the.—See Dislocations of the Ankle.

Dorsal Flexion of the.—L. *dor'sum*, back; *flex'io*, bending. See Talipes Calcaneus.

Flat.—See Weak Foot.

Flexion, Dorsal.—L. *flex'io*, bending; *dor'sum*, back. See Talipes Calcaneus.

Plantar.—L. *plan'ta*, sole of the foot. See Talipes Equinus.

Hollow or Contracted.—See Hollow or Contracted Foot.

Inversion of the.—L. *in*, in + *vert'ere*, to turn. See Talipes Varus.

Morton's Painful Affection of the.—See Anterior Metatarsalgia.

Plantar Flexion of the.—L. *plan'ta*, sole; *flex'io*, bending. See Talipes Equinus.

Splay.—See Weak Foot.

Tuberculosis.—See Tuberculosis of the Long Bones of the Hand and Foot.

Weak.—See Weak Foot.

Forearm, Fractures of the.—See Fractures of the Forearm, the Shaft; Fractures of the Elbow; Fractures of the Radius, the Lower End.

Fractures. Introduction.—General Considerations.—The symptoms of bone fracture are variable, embracing local pain and tenderness, loss of function, crepitus, deformity, abnormal mobility, and echymosis. One should compare the appearance and measure-

ments of the injured side with those of the sound side, and should take an X-ray picture, (see Part 1) if practicable. In using the fluoroscope, it is advised that the limb be held eight to twelve inches from the tube, and exposed no longer than five minutes, in order to avoid a burn. One should bear in mind that the X-ray may falsely exaggerate the degree of displacement.

Before applying retentive apparatus, bathe the skin with soap and warm water, shave, if adhesive plaster is to be applied, rinse and dry thoroughly, sponge with alcohol, dry, and dust with a bland powder, such as oxide of zinc and starch, equal parts. Paint blebs with alcohol or tincture of iodine, open with a sterile needle, and cover with sterile boric acid and sterile gauze. A little morphine may be given the first night, if much pain is complained of. For instructions how to prepare plaster bandages and casts, see these headings. In recumbent cases, one may employ the Bradford frame, with ropes and pulleys, for elevating the patient when using the bed-pan.

Nerve injury is due to contusion or laceration, or to compression by callus. A lacerated nerve should be sutured at once. Compressing callus should be removed. The affected muscles should be massaged and stimulated electrically until the nerve function is restored (see Anterior Poliomyelitis, in Part 1).

Threatened gangrene calls for immediate amputation well above the fracture.

For the treatment of gas infection, see Infection, in Part 1.

For the treatment of gunshot fractures, etc., see Wounds, in Part 1.

Open fractures should be treated as follows: Wash the skin with soap, brush, and hot water, shave, and rinse thoroughly, and wash the wound with hot water with extreme thoroughness, using the gloved fingers and small gauze swabs held in forceps. Then, if deemed important, irrigate with bichloride solution, 1 : 5000. Do not remove bone fragments unless they are completely detached. Suture the bones with silver or bronze aluminum wire, or use boiled beef-bone screws and plate (better than metal), or an intramedullary beef-bone peg. Douche the wound again thoroughly with hot water, and close, leaving in, perhaps, a small drain for twenty-four hours. Immobilize the parts.

For greater comfort and convenience in the treatment of open fractures, the window of the cast may be sealed to the skin at its circumference by means of dental rubber, No. 2, dissolved in chloroform to make a semigelatinous paste, and then mixed with absorbent wool. The cast is then covered with shellac. Fig. 124 shows the use of a U-shaped piece of iron in the treatment of open fractures.

In non-union due to too great loss of substance, Albee's method of autogenous bone transplantation is indicated.

In the operative treatment of closed fractures, it is perhaps best to wait for seven to ten days, or until the tissues have recovered somewhat. Operation for non-union should not be performed until all traces of inflammation are absent. Test for latent inflammation by active and passive movements, brisk massage, and the elastic tourniquet.

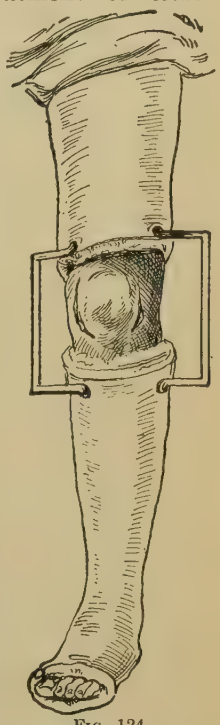


Fig. 124.

Union of a fracture occurs usually in from three to four weeks, but it is not solid for six to eight weeks or more.

After gunshot fractures the bones remain soft for several months after union has occurred, so that a calliper splint or other support should be worn during this period, in these cases. One may commence massage at about the end of two weeks (at first of five to ten minutes duration, gradually lengthened to thirty minutes); passive motion at the end of about four weeks; active motion at about the end of the sixth to eighth week. Hot air (see under Arthritis) and hot or cold douches are serviceable stimulating measures.

Delayed union means absence of rigid union after the lapse of eight to twelve weeks. The causes are (1) imperfect immobilization, (2) wide separation of the bone fragments, (3) the interposition of soft tissue between the bone fragments, (4) over-extension or too prolonged extension, especially in fractures of the humerus, and (5) certain constitutional affections, *e.g.*, gout, rheumatism, rickets, scurvy, diabetes, chronic nephritis, syphilis, and the causes of fragilitas ossium (*q.v.*,). The treatment depends upon the cause. Wide separation of the fragments and the interposition of soft tissue call for operative interference, and if neces-

sary, resection of the ends of the fragments. Autogenous bone transplantation, intramedullary beef-bone pegs, or boiled beef-bone plates, and screws may be employed. Metal retards bone osteogenesis and destroys bone cells. Constitutional disorders call for appropriate treatment. Thyroid extract, pituitary extract, and potassium iodide (see Drugs, Part 11) are well recommended for their stimulating effect upon bone formation. Tonics may be required: strychnine, nux vomica, arsenic, iron, quinine, phosphorus. Rubbing the fractured ends of the bone together may stimulate bone regeneration.

In vicious union, do a transverse or cuneiform osteotomy with chisel and mallet, and correct the deformity.

Special fractures are considered in their alphabetical order.

Fractures of the Acetabulum.—L., "vinegar cruet," from *ace'tum*, vinegar. See Fractures of the Femoral Neck; and Dislocations of the Hip, Central.

Acromion.—Gr. *ἄκρον* point + *ὦμος* shoulder. See Fractures of the Scapula.

Anatomical Neck of the Humerus.—Gr. *ἀνά* apart + *τέμνειν* to cut. See Fractures of the Humerus.

Fractures of the Ankle.—Consider, in injuries at the ankle, the following possibilities: Pott's fracture of the lower end of the tibia and fibula; dislocation; fracture of the tarsal bones; sprain; rupture of the tendo Achillis (*q.v.* in their alphabetical order).

Fractures of the Astragalus.—L.; Gr. *ασтράγαλος* die. See Fractures of the Tarsal Bones.

Fracture, Bennet's.—See Fractures of the Metacarpal Bones.

Fractures of the Carpal Bones.—L. *car'pus;* Gr. *καρπός* wrist. Fracture of the scaphoid bone (marked particularly by acute tenderness on pressure in the anatomical snuff-box when the hand is adducted, and muscle-spasm upon forced extension of the wrist, is perhaps best treated by excision of the smaller fragment, or even of the whole bone, followed by immobilization for two weeks, and then massage and passive and active movements. The fingers are to be used at the end of a week.

If conservative treatment is tried, immobilize the parts for four weeks, followed by massage and passive and active movements for four weeks longer. If then there is no improvement, operate.

The operation of Codman and Chase is as follows: Make a half-inch long incision on the dorsum of the wrist, just internal and parallel to the tendon of the extensor carpi radialis longior. After retracting the tissues, carry this incision through the angular ligament in the fibrous septum between the long extensors of the fingers and the long extensors of the wrist.

Fractures of the Clavicle.—L. *clavic'ula*, little key, from *clav'is*, key. If displacement exists, the inner fragment is drawn upward by the sterno-cleidomastoid muscle, while the outer fragment lies below and behind the inner fragment, due to the weight of the arm, which carries the shoulder forward and inward; or else there is an angular deformity with the apex directed backward.

After carefully cleansing the skin with soap and water, shaving, drying, sponging with alcohol, drying, and dusting the axilla and flexure of the elbow with talcum powder or equal parts of starch and zinc oxide, place soft pads in the axilla, flexure of the elbow, and on the forearm where it will come in contact with the chest. Encircle the upper arm, as high as possible, with a small folded towel held together by adhesive plaster. Encircle this cloth armlet and fasten with a safety pin one end of a long zinc-oxide adhesive strap, and while seeing that the shoulder is held well back and elevated, so as to bring the fragments in apposition, carry the adhesive strap back and completely around the chest to the axilla of the injured side. Start another long adhesive strap at the back of the injured shoulder, and carry it under the elbow (make a hole in the strap to receive the point of the elbow), and up and across in front to the well shoulder, the forearm being flexed and resting upon the chest. The aim of this dressing is to raise and carry the shoulder backward, and the elbow forward. Place another strap horizontally around the whole chest and arm for security; and over all apply a Velpeau bandage (*q.v.*). (Sayre.)

If a pad over the fractured ends is deemed advisable, take care to avoid undue pressure. Such a pad is held in place by a long adhesive strap passed beneath the flexed elbow. It is seldom required.

Inspect the parts frequently, and remove and reapply the dressings at least every twelve days; cleansing, drying, and powdering the skin at each change of dressing. In children, the skin may have to be cleansed about every third day to avoid chafing.

Omit the Sayre dressing at the end of three or four weeks, and support the arm in a sling for about a week longer. After the fourth week, begin to employ massage and passive and active movements.

Suture of the fragments with kangaroo tendon is sometimes the best treatment. The parts are then supported by means of a Velpeau bandage reinforced with adhesive straps.

In green-stick fracture, after the deformity has been corrected under anæsthesia, it is necessary merely to bind the upper arm to the chest by means of a towel swathe held in place by shoulder straps, and to support the forearm in a sling, all retentive dressings being dispensed with after two to four weeks.

Fracture, Colles's.—See Fractures of the Radius, the Lower End.

Compound.—See under Introduction: General Considerations, at the beginning of Fractures

Condyle, External.—L. *con'dylus*, knuckle; *exter'nus*, outside. See Fractures of the Elbow.

Internal.—L. *inter'nus*, inside. See Fractures of the Elbow.

Fractures of the Elbow.—Consider, in injuries to the elbow, the following possibilities: sprain; supracondyloid fracture of the humerus; T or Y-shaped fractures of the humerus into the joint; fracture of the internal condyle; fracture of the external condyle; fracture of the internal epicondyle in children; separation of the lower epiphysis of the humerus (occurring before the seventeenth year); subluxation of the head of the radius (occurring in children under five years, *q.v.*); forward dislocation of the upper end of the radius (*q.v.*); fracture of the upper end of the ulna; backward dislocation of the radius and ulna (*q.v.*), with or without fracture of the coronoid process of the ulna; fracture of the olecranon ; fracture of the neck or head of the radius.

Measure the distance between the two condyles of the humerus, and the distance between the acromion and the external condyle, and compare these measurements with those of the other side. Palpate the head of the radius just beneath the external condyle, and note if it moves with the shaft of the radius during pronation and supination. Compare the carrying angle of the injured arm with that of the normal arm.

With the forearm extended, no lateral motion of the forearm on the humerus is normally possible. With the forearm extended, the tip of the olecranon lies on or just slightly above a transverse line drawn through the internal and external condyles. With the forearm flexed to a right angle, the tip of the olecranon and the two condyles form an equilateral triangle with the olecranon at the lower angle.

Make the manipulative examination under anæsthesia and at the same time correct deformity, by flexing the elbow to a right angle, exerting traction with one hand, and pressing the fragments into position with the other. An X-ray picture should be taken, if possible.

Treat any of the varieties of fracture enumerated above, excepting fracture of the olecranon, as follows:

After cleansing and drying the skin, and reducing displacements, supinate the forearm fully and flex it acutely as far as possible, with a piece of protective gauze and talcum powder in the flexure of the elbow. Hold the forearm in this position by means of a band of adhesive plaster around the forearm and upper arm, with pieces of gauze under the adhesive plaster at points of pressure to prevent chafing, or else by means of figure-of-eight turns of a flannel bandage. Protect apposed skin surfaces (hand, forearm, chest, and axilla) with powder and thin, soft pads; and bind the arm to the chest by means of a Velpeau bandage (*q.v.*) reinforced with adhesive plaster.

Renew the dressing as the swelling subsides. At the end of the fourth week, begin daily massage of five to ten minutes duration; and passive and active movements, if not painful, at the end of the fifth or sixth week. In performing passive movements, grasp the elbow with one hand, and flex extend, pronate, and supinate the forearm to its full extent. Gradually diminish the acuteness of flexion at the end of the fourth week by lengthening the sling.

If, in fracture of the neck or head of the radius, the fragments can not be approximated, resect the head of the bone after the swelling has subsided.

Gunshot fractures through the elbow joint, in view of the danger of ankylosis, should be treated at right angles, with the forearm about three-fourths supinated. (Col. Sir Robert Jones).

Treatment of Fractures of the Olecranon.—After cleansing, drying, and powdering the skin, apply with adhesive straps a padded, internal, right-angled, perforated metal splint for about six days, or until the swelling has subsided. If no separation of the fragments is then evident, continue this position. If separation of the fragments is observed, however, extend the arm, and apply a long padded internal splint, extending from the axilla to the tips of the fingers, held in place by straps of adhesive plaster, placed above and below the elbow and at both ends of the splint. Hold the upper fragment of the

olecranon against the lower fragment by means of a strip of adhesive plaster fastened to the splint. Apply over all a bandage extending from the fingers to the axilla.

Renew the dressings and massage the parts once a week. Change the angle of the splint after the third week. Employ daily massage and passive motion at the end of the fourth week. Omit splints after five weeks and support the arm in a sling.

Operation and suture of the fragments is sometimes required. It is sufficient to suture the aponeurosis with kangaroo tendon.

Fractures of the Epicondyles of the Humerus.—Gr. *ἐπί* upon + *κόνδυλος* knuckle. See Fractures of the Elbow.

External Condyle of the Humerus.—L. *exter'nus*, outside; *con'dylus*, knuckle. See Fractures of the Elbow.

Femoral Head.—L. *fe'mur*, thigh. See Fractures of the Femoral Neck.

Femoral Lower End.—See Fractures of the Femoral Shaft.

Fractures of the Femoral Neck.—With the transverse line between the anterior superior spines of the ilium at right angles with the long axis of the body, and the limbs in the same relative position to the midline of the body, measure and compare the lengths of the two limbs between the anterior superior spines and the lower border of the internal malleoli; bearing in mind that in some individuals a normal difference of one-half to one inch exists.

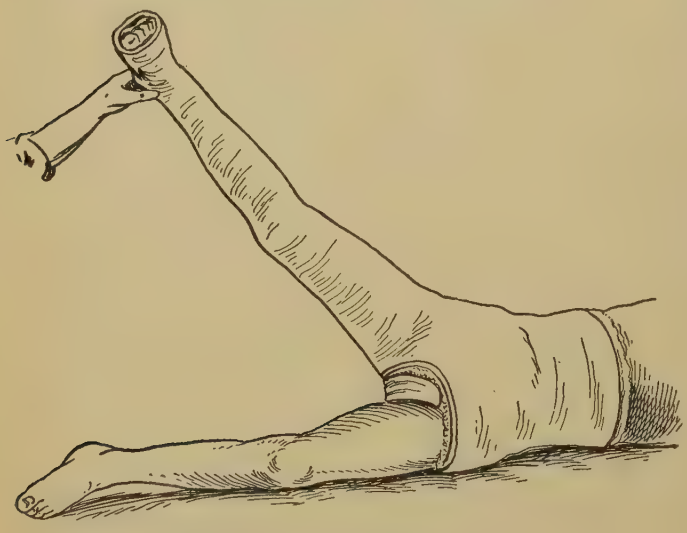


Fig. 125.—Whitman method of splinting fracture of the femoral neck.

The top of the great trochanter normally lies on or just below a line drawn from the anterior superior spine of the ilium to the tuberosity of the ischium (Nélaton's line). Compare the two sides.

Bryant's line is a line drawn from the top of the trochanter to a perpendicular line dropped from the anterior superior spine to the horizontal bed or table. It measures in the adult normally two and one-half inches. Compare the two sides.

The head and neck of the femur have the same general direction as the internal condyle.

In fracture of the neck of the femur, the limb lies helpless and everted (inverted in rare instances of impaction of the anterior portion of the neck), and there is a slight fulness just below the fold of the groin. The limb is shortened, and the top of the great trochanter is above Nélaton's line. Exclude dislocation, etc. (see Fractures of the Hip). Avoid breaking up an impaction.

In fractures at the junction of the head and neck, bony union is rare. In feeble patients over sixty, no matter where the fracture is located, union seldom occurs.

Treatment. — Treat young patients and healthy adults by the Whitman method: First cleanse, dry, and powder the skin. Under anæsthesia, with the pelvis elevated and the well limb strongly abducted and used to steady the pelvis, flex the injured limb somewhat, rotate it inward to disengage any soft tissues from between the fragments, lift the trochanter forward, correct abnormal eversion (or inversion) of the foot, exert strong traction until both limbs are of equal length, and then abduct the limb to as near the normal limit of 45° as possible. Now apply a plaster-of-Paris spica to the pelvis, thigh, and leg, down to the middle of the leg in adults, and including the foot in children (see Plaster Bandages and Plaster Casts). Strengthen the cast posterior to the joint by means of a strip of metal bent to correspond with the curve of the buttock. A strip of metal may also be placed at the knee. Attach a perineal band to the pelvic portion of the spica (see Fig. 125). Employ, besides, traction (see below), if the shortening is greater than three-fourths of an inch, and the fragments are not impacted.

Remove the plaster spica after about eight weeks, and allow the patient about on crutches for several weeks longer before allowing the foot on the ground. Raise the

sole of the shoe on the sound side three or four inches while using crutches.

Another but less accurate method of treatment, by which, if deemed necessary, the patient may be allowed out of bed on crutches, is that with the Thomas hipsplint (see Fig 126): First correct displacement, under anæsthesia, by traction, forward pressure upon the trochanter, and the correction of eversion (or inversion). Then apply a Thomas hip-splint, which consists of a posterior strip of soft iron extending from the axilla to the calf of the leg, 1¼ inches wide and ¼ inch thick, with a chest band nearly encircling the chest, 1¼ inches wide and 3/32 inch thick, with holes forged in the ends, ½ inch in diameter, a thigh band midway between the two extremities, just below the perineum, ¾ inch wide and 1/16 inch thick, two inches less than the circumference of the thigh, and a calf band, 5/8 inch wide and 1/16 inch thick, two inches less than the circumference of the calf of the leg. At the buttock, the long posterior strip is bent to conform with the natural curve here. The splint may be made by a blacksmith. The body surface of the splint is padded with one-quarter inch felt, and covered tightly with basil leather put on wet. The splint is bandaged, or strapped and buckled to the leg and thigh, and then the shoulder straps are applied, using the anterior ends of the straps to fasten the ends of the chest band together. If traction is employed, long adhesive straps may be fastened to each side of the shaved thigh high up and brought around the wings of the calf band, the shoulder straps being then omitted.

In lifting the patient to adjust the bedpan, place the arms below the knees. Guard against pressure sores by turning the patient daily on the sound side and pulling the skin first to one side of the splint and then to the other. Additional padding may be required.

If the patient is gotten up on crutches, the sole of the shoe on the sound side should be raised about three or four inches.

After six to eight weeks omit the splint, and after four more weeks in bed, in cases in which recumbency is to be preferred, gradually get the patient up on crutches.

In old and feeble patients employ the following method: Avoid breaking up an impaction. Place boards crosswise under the mattress to prevent sagging. Place the leg in a comfortable position with a pillow beneath the knee; and after shaving the skin, cover the foot with a flannel bandage from the toes to just above the malleoli, and apply on each side of the limb from the pubes and trochanter to the malleoli, and extending six inches beyond the sole of the foot, a long strip of zinc oxide, or better, moleskin (yellow) adhesive plaster (less irritating than rubber plaster), wide above and narrow below the knee (or about two inches wide), with the sticky side opposite the ankle and foot covered with muslin or another adhesive strip, to prevent adhesion to the ankle and foot bandage. Hold these long side strips in place by means of two long spiral adhesive strips extending from the ankle to the upper part of the thigh, and other circular strips around the ankle, just above the knee, and around the upper thigh (only partly encircling the limb to avoid

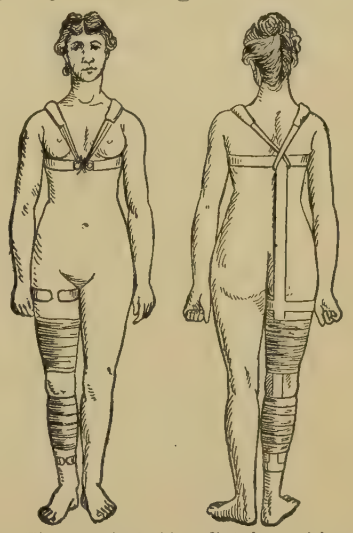


Fig. 126. Thomas' single hip-splint in position (Ridlon). "The Treatment of Fractures."—Scudder. (Courtesy W. B. Saunders Co.

constriction). Fasten the ends of the long side strips to a wooden spreader a little broader than the width of the ankle, and through a hole in the center of the spreader pass a clothes-line, and tie the proximal end in a knot for the purpose of traction upon the spreader. Pass the line over a pulley fastened to the end of the bed, and attach to it a weight of about five pounds. Cover the adhesive strapping with a stocking or with an evenly applied bandage extending from the toes to the groin, with its margins stitched to keep it in place. (Buck's extension.)

Now apply, from the axilla to below the foot, a long, padded, wooden T-splint (four feet long, four inches wide, one inch thick, with a cross-piece at the lower end fastened with nails or an iron brace, the inner limb of this foot-piece containing a hole for the passage of the traction cord), and bind it to the trunk with a towel or with broad

muslin bandages, and to the leg with straps or bandages, and place a well-padded perineal band in position with its ends passed through holes in the upper part of the T-splint.

Place long sandbags on each side of the leg and thigh. Protect the heel from pressure with a padded ring or a cushion ring pessary; and keep the foot at right angles with the leg. Elevate the foot of the bed six inches with blocks of wood, the upper ones being cupped out to receive the legs of the bed. Protect the limb from the weight of the bed-clothing by means of a cradle. Guard against bed-sores (*q.v.*, in Part 1), and against hypostatic pneumonia by deep breathing, changing the position of the patient frequently, bidaily general massage, and passive and active movements of the sound limbs.

In the second week, prop the patient up in bed with pillows. In the third week omit traction. After six to eight weeks get the patient up in a wheel chair. After ten weeks, allow him about with a crutch, but permit no pressure upon the foot for three or four months from the reception of the injury. At the end of a year the patient may walk with a cane. (Scudder.)

Eisendrath regards as the best method of treatment of impacted fractures complete immobilization in the impacted position, " without attempting to correct the deformity," accomplished by means of a plaster-of-Paris spica extending from the umbilicus to the toes. The patient is allowed about on crutches, if not too feeble, the sole of the shoe on the sound side being raised three or four inches. No weight should be borne upon the foot for three months. Feeble patients are kept upon a firm bed, or better, upon a suspended Verity gas-pipe frame, which may be raised or lowered at will.

Pegging of the fracture with beef-bone or ivory screws, or pegs, driven through the trochanter into the head, is sometimes considered the preferable mode of treatment, especially in fractures at the narrow portion of the neck. The incision is made to the outer side of the tensor vaginæ femoris muscle. It is best to wait eight days before operating. After the operation, immobilize the hip, in an abducted position, with plaster-of-Paris, as in the Whitman method, described above.

Fractures of the Femoral Shaft.—With the transverse line between the anterior superior spines of the ilium at right angles with the long axis of the body, and the two limbs in symmetrical positions with reference to the midline, compare the lengths of the two limbs measured from the anterior superior spine to the lower border of the internal malleolus.

Treatment.—Under anæsthesia, with an assistant steadying the pelvis and upper fragment, reduce the fracture by traction and manipulation.

A. The following is the conventional method of fixation: Cleanse, shave, and dry the skin, and cover the foot with a flannel bandage from the toes to just above the malleoli. Now apply on each side of the limb, from the site of the fracture to the malleoli, and extending six inches beyond the sole of the foot, a long, two-inch-wide strip of zinc oxide adhesive plaster, with the sticky side opposite the ankle and foot covered with another adhesive strip or with muslin, to prevent adhesion to the ankle and foot bandage. Hold these long side strips in place by means of two long spiral adhesive strips extending from the ankle to the seat of fracture, and other circular strips around the ankle, just above the knee, and just below the fracture (only partly encircling the limb to avoid constriction). Fasten the ends of the long side strips to a wooden spreader a little broader than the width of the ankle, and through a hole in the centre of the spreader pass a clothes line, and tie the proximal end in a knot for the purpose of traction upon the spreader. Pass the line over a pulley fastened to the end of the bed, and attach to it, in adults, from fifteen to twenty-five pounds, or sufficient to prevent shortening (Buck's extension). Cover the adhesive strapping with a stocking or with an evenly applied bandage extending from the toes to the groin, with its margins stitched to keep it in place.

Place beneath the limb a padded, wooden posterior or ham splint, extending from the buttock to the middle of the leg, with an additional pad beneath the knee. Fasten the splint to the limb with adhesive plaster, one strap at each end and one below the knee. Then place three padded coaptation splints, one anteriorly from the groin to the patella, one externally from the trochanter to the external condyle, and one internally from the perineum to just above the adductor tubercle. Hold these splints in place with straps and buckles.

Now apply, from the axilla to below the foot, a long, padded, wooden T-splint (four feet long, four inches wide, one inch thick, with a cross-piece at the lower end fastened with nails and an iron brace, the inner portion of the foot-piece containing a hole for

the traction line), and bind it to the trunk with a broad swathe, and to the thigh and leg with straps, and place a well-padded perineal band in position with its ends passed through holes in the upper part of the T-splint. The limb should be somewhat abducted.

Place long sandbags on each side of the thigh and leg. Protect the heel from pressure with a padded ring or a cushion ring pessary. Keep the foot at right angles with the leg, and guard against eversion by means of a bandage attached to the ham splint below the calf of the leg and brought up on the outer side of the leg and fastened to the top edge of the long T-splint. Raise the foot of the bed about six inches with blocks of wood, the upper ones being cupped out to receive the legs of the bed. Place a cradle over the foot and leg to protect them against the weight of the bed clothing. Guard against outward bowing of the limb with resulting shortening, and against inward or outward rotation. Where it is deemed important to get the patient up, use the Thomas hip-splint described under Fractures of the Femoral Neck.

B. If the fracture is subtrochanteric, the lower fragment and leg should be elevated upon a single inclined plane, and abducted, so as to bring the lower fragment on a line with the upper fragment. Wiring the fragments with silver or bronze aluminum is, however, perhaps best in fractures in this location.

C. If the fracture is supracondyloid (exclude separation of the lower epiphysis of the femur, *q.v.*, and dislocation of the knee, *q.v.*; in supracondyloid fracture the lower fragment is pulled downward and backward by the gastrocnemius muscle, whereas, in epiphyseal separation, the upper fragment is pulled downward and backward and the lower fragment is displaced forward; in either case the popliteal vessels may be pressed upon with danger of gangrene; therefore always examine for pulsation below the point of fracture), flex the leg, and place the limb upon a double-inclined plane (Fig. 127), with pads beneath the lower fragment to raise it and bring it in apposition with the upper fragment. Traction may not be required.

Remove and reapply the splints and dressings at the end of four weeks, and see that everything is correct. Remove all retentive apparatus at the end of the eighth week, and begin passive and active movements and massage. Get the patient up on crutches at the ninth week, with the shoe raised two inches on the sound side, and with perhaps a light plaster-of-Paris spica (*q.v.*) from the toes to the waist, or a Taylor hip-splint. Discard all support at the end of twelve weeks. The bearing of weight upon the foot should be gradual.

D. In children under ten years of age

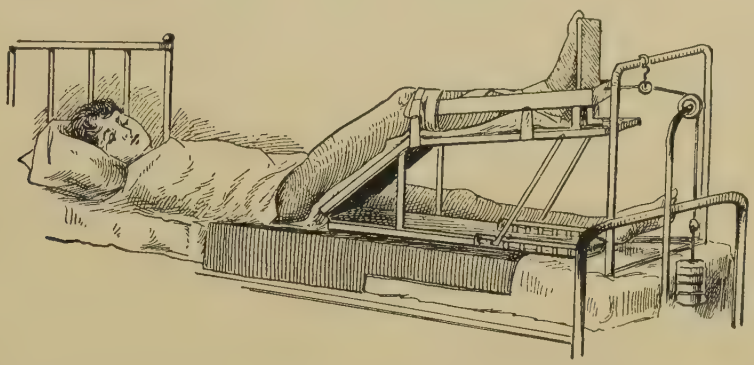


Fig. 127.

Scudder recommends the Cabot posterior wire frame, with co-aptation splints and Buck's extension.

At the end of four weeks, get the patient up in his Cabot splint, with shoulder straps to hold it up (or apply, instead, a light plaster-of-Paris spica, *q.v.*), and allow him about on crutches with a high shoe on the sound foot.

E. In very young children one may strap the patient's shoulders and hips to a Bradford frame (or gas piping, one inch wider than the width of the hips and six inches longer than the child, and covered with canvas except beneath the buttocks), and suspend the limb at right angles to the trunk by means of traction straps, cord, pulleys, and weights, applied as before described, with coaptation splints applied as before described, the only difference being the upright position of the limb (see Fig. 128).

F. Probably the best method, however, of immobilizing a fracture is by means of

plaster (*q.v.*,) which should extend beyond the joints next above and below the site of fracture. If the fractured ends, however, are oblique, so that they will not remain in apposition, or if soft parts are

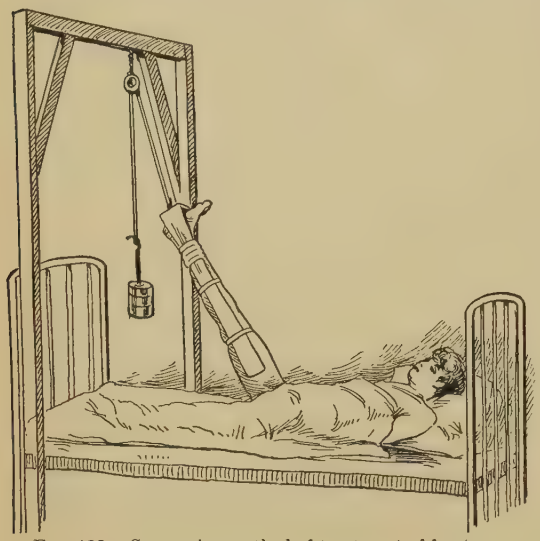


Fig. 128.—Suspension method of treatment of fracture.

interposed, the fracture must be cut down upon and the ends of the bone united by wire or plate, the latter preferably of beef-bone or ivory with screws of a like material.

G. The Thomas knee splint (see under Fractures of the Leg, the Shaft) may be used for fracture of the femoral shaft.

H. Separation of the lower femoral epiphysis occurs under twenty-one years of age. It is treated as follows (Scudder): If the fracture is an open one, resect any of the diaphysis that happens to be stripped of its periosteum, reduce the displacement, and if necessary, suture the fragments. Immobilize the knee, flexed at a right angle, with plaster-of-Paris (*q.v.*), applied from the toes to the groin. If the fracture is closed, try, if possible, to reduce it by traction upon the lower end of the thigh upward, and upon the leg below the flexed knee forward, as shown in Fig. 129. The disappearance of shortening shows that the displacement has been corrected. If unsuccessful, operate.

At the end of three or four weeks, gradually extend the leg. At the end of about five weeks, allow the patient to commence bearing slight weight upon the leg. After about six weeks, remove the plaster-of-Paris splint, and begin massage and passive and active motion. After about ten weeks the whole weight may be borne upon the leg.

I. For traction purposes one may use screws introduced into the uppermost portion of the condyles close to the diaphysis to a depth of two to three centimetres.

Fractures of the Femur, Subtrochanteric.—L. *sub-* under; L., Gr. τροχαντήρ runner. See under Fractures of the Femoral Shaft.

Supracondyloid.—L. *su'pra-* above; *con'dylus*, knuckle. See under Fractures of the Femoral Shaft.

Fibula, the Lower End.—L. *fib'ula*, buckle. See Fractures of the Leg, the Lower End.

Upper End.—See Fractures of the Leg, the Shaft.

Fingers, the Phalanges.—See Fractures of the Phalanges of the Fingers.

Fractures of the Forearm, the Shaft.—After cleansing, drying, and powdering the skin, reduce the fracture under anæsthesia, and see that the forearm can be supinated strongly.

With the forearm flexed to a right angle and semisupinated so that the thumb points upward, cover the limb with a layer of sheet wadding, and apply a plaster-of-Paris bandage (*q.v.*) from the metacarpophalangeal joints to the axilla. Split the splint before it has hardened, and protect the cut edges against crumbling with a strip of

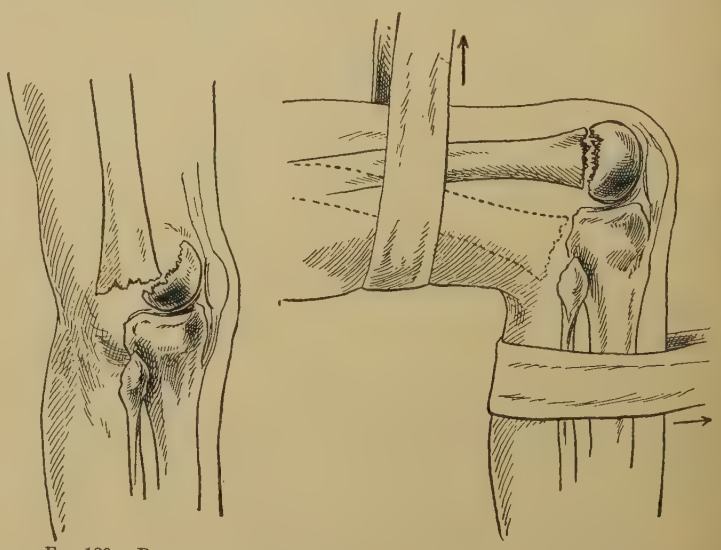


Fig. 129.—Proper way to reduce separation of the lower femoral epiphysis.

adhesive plaster. Apply a snug bandage over the splint to hold it in place. Support the arm in a sling.

Readjust the splint once a week. Discard it at the end of four weeks, and begin daily massage and passive and active movements.

If, because of swelling and bruising of the soft parts, it is deemed best to employ wooden splints (made of thin splint wood, padded), apply one posteriorly from the metacarpophalangeal joints to the elbow, and another anteriorly from the middle of the palm nearly to the elbow, cutting out a portion of the latter to accommodate the ball of the thumb. The splints should be about a quarter of an inch wider than the forearm. Hold them in place with straps of adhesive plaster, one at the upper end, one at the wrist, and one around the posterior splint and palm. With the forearm flexed at a right angle, and semisupinated so that the thumb points upward, immobilize the elbow joint by means of an internal, right-angled, perforated metal splint. Apply over all a bandage from the hand to the axilla, and place the arm in a sling which supports the whole forearm from the hand to the elbow.

Remove and readjust the splints twice a week. Discard them at the end of the fourth or fifth week and commence massage and passive and active movements.

Fractures, Glenoid.—Gr. γλήνη cavity + εἶδος form. See Fractures of the Scapula.

Gunshot.—See under Introduction, at the beginning of the subject of Fractures.

Head of the Humerus.—See Fractures of the Humerus.

Head of the Radius.—See Fractures of the Elbow.

Head of the Femur.—See Fractures of the Femoral Neck.

Fractures of the Hip.—Consider, in injuries to the hip, the following possibilities: sprain, fractures of the head and neck of the femur, epiphyseal separation, fractures of the acetabulum, fractures of the greater or lesser trochanter, and dislocations.

With the transverse line between the anterior superior spines of the ilium at right angles with the long axis of the body, and the limbs in the same relative position to the midline of the body, measure and compare the lengths of the two limbs between the anterior superior spines and the lower border of the internal malleoli. Remember that in some individuals a normal difference of one half to one inch obtains.

The top of the greater trochanter normally lies on or just below a line drawn from the anterior superior spine of the ilium to the tuberosity of the ischium (Nélaton's line). Compare the two sides.

Bryant's line is a line drawn from the top of the trochanter to a perpendicular line dropped from the anterior superior spine to the horizontal bed or table. It measures in the adult normally two and a half inches. Compare the two sides.

Note whether internal or external rotation of the limb is present.

The head and neck of the femur have the same general direction as the internal condyle.

In manipulating the injured limb, take care not to break up a possible impaction.

Fractures of the Humerus.—L. *hu'merus*, upper arm bone. Compare the lengths of the two upper arms, measured from the acromion process to the external condyle. The head of the humerus normally points in the same direction as the internal condyle at the elbow. In the consideration of injuries in the neighborhood of the upper end of the humerus, consult Fractures of the Shoulder.

A. Fracture of the Anatomical Neck.—This is a rare, commonly impacted fracture, which occurs in old people, and which requires simple support by means of a sling, and early use of the joint as soon as the absence of pain permits. An axillary pad and Velpeau bandage (*q.v.*) may be employed. Recovery is slow.

B. Fracture of the Tuberosities.—The treatment is the same as that of fracture of the anatomical neck, considered above.

C. Separation of the Upper Epiphysis.—This occurs between the sixth and twentieth (to twenty-fifth) year of age. The lower fragment or diaphysis is displaced forward and inward.

Correct displacement by traction and pressure against the upper end of the diaphysis backward and outward. An operation is sometimes required and suture of the fragments with kangaroo tendon.

After reduction, immobilize the joint as described below for fracture of the surgical neck.

D. Fracture of the Surgical Neck.—Reduce the fracture, under anæsthesia if necessary, by traction in the abducted position.

After cleansing, drying, and powdering the whole arm, shoulder, and axilla, apply a firm, even flannel bandage from the middle of the hand to the shoulder, with the forearm flexed at a right angle. Then place in

the axilla, with the apex upward, a padded triangular splint, made of cardboard or thin wood, one-eighth of an inch thick, and a little wider than the arm, the triangle measuring about three inches at its base, and extending from the apex of the axilla to just above the internal condyle. Hold the triangle in position by means of a strap which passes around the trunk or around the opposite shoulder and axilla in the form of a figure-of-eight.

Now pad the entire shoulder, the upper arm down to the elbow, and the adjoining chest, anteriorly and posteriorly, with sheet wadding, and apply a shoulder cap of plaster-of-Paris (*q.v.*) covering all these parts.

Then place a thin towel upon the sound side of the thorax, and apply a circular bandage around the chest and affected arm, and another bandage under the triangular splint and over the shoulder, to hold the cap in place. Like retaining bandages or straps may be incorporated in the shoulder-cap before the latter is completed. Then support the forearm, not including the elbow, in a sling, so that traction may be exerted by the weight of the arm.

Eisendrath says that a Velpeau bandage (*q.v.*) reinforced by adhesive plaster or a few turns of plaster-of-Paris will often yield equally as good results as the plaster-of-Paris shoulder cap.

Instruct the patient to move the fingers frequently. Remove the dressings, and examine the arm about every seven days, and apply a fresh shoulder cap when the latter becomes loose.

At about the end of the fourth week, when union has become firm, omit all dressings except a sling supporting the wrist, and commence massage and passive movements.

If a position of stability cannot be secured by any other means, owing to obliquity of the fracture or the interposition of soft parts, the fragments must be wired with silver or bronze aluminum. (See also G, below).

E. Fractures of the Shaft.—Reduce the fracture, under ether if necessary, and see that the acromion process and the external condyle are in the same line.

After cleansing, drying, and powdering the whole arm, shoulder, and axilla, apply a firm, even flannel bandage from the middle of the hand to the shoulder, with the forearm flexed at a right angle. Then place in the axilla with the apex upward, a padded triangular splint made of cardboard or thin wood, one-eighth of an inch thick, and a little wider than the arm, the triangle measuring about three inches at its base, and extending from the apex of the axilla to just above the internal condyle. Hold the triangle in position by means of a strap which passes around the trunk or around the opposite shoulder and axilla in the form of a figure of eight.

Surround the upper arm with coaptation splints, made by laying thin splint wood upon the sticky side of adhesive plaster and then splitting the wood, but not the plaster, into strips with a knife. Hold the splint in place with three straps of adhesive plaster.

Now apply a wide adhesive plaster swathe around the chest and upper arm, extending from the acromion above to the external condyle below. Then support the wrist in a sling, leaving the elbow unsupported, so that traction may be exerted by the weight of the arm. Rarely is additional traction (by means of strips of adhesive plaster applied to the inner and outer aspects of the upper arm, a wooden spreader to keep the plaster clear of the elbow, and a weight of three pounds) required.

If desired, one may apply a split plaster-of-Paris splint (*q.v.*) to the forearm, arm, and shoulder, over the wooden coaptation splints.

Reapply the dressings once a week, cleansing, drying, and powdering the skin each time. At about the end of the fourth week, if union has occurred, commence massage and passive movements; and about two weeks later omit all support except a sling to the wrist.

If a position of stability of the two fragments can not be secured by the above treatment, owing to the obliquity of the fracture or the interposition of soft parts, the fragments must be wired with silver or bronze aluminum.

Remember that the musculospiral nerve may be injured, with resulting wristdrop. In the presence of such a complication, operate, to free or suture the nerve, only if the paralysis persists for four or five weeks. Resect the humerus if the ends of the nerve can not be brought together. Employ massage, electricity, and passive motion until power is restored, that is, for from five to eight months. (See also G, below).

F. Fractures of the Lower End. — See Fractures of the Elbow.

G. The arm-abduction splint shown in Fig. 130 is a useful appliance for upper arm fractures. Its construction is described by E. W. Cleary, in the J. A. M. A. of Nov. 15, 1919, as follows: A soft iron rod, $\frac{5}{16}$ inch in diameter and 12 feet long, is bent

into the shape of a double-pointed carpet tack (viz., ⊓) with legs of equal length and a middle segment one foot long. The middle segment is curved to fit the waist on the uninjured side at the level of the iliac crest, the two legs of the bent rod pointed upward. At a point 2 inches above the middle segment each leg is bent laterally through a right angle; and at another point, ½ inch further, another right angle bend in the reverse direction is made. These bends prevent the attached waist belt from slipping upward. One inch above the level of the axilla the two legs of the rod are bent horizontally across the body, each with a slight convex curvature toward the body. The injured arm is brought to a position of 90° abduction, with the elbow in right-angled flexion in the horizontal plane. The rear rod lies behind the arm and projects beyond the elbow. It is now bent forward through a right angle, 26½ inches from the last bend, so that it lies along the forearm. In the same way the front rod is bent at a point 21½ inches from its last bend, so that it extends forward inside the forearm. Eleven inches from the bend at the elbow this inside rod is now bent through a right angle across the hand. The outside rod is bent inward through a right angle where the inside rod crosses it, and the surplus ends of the two rods are cut off so that when the ends of the frame are brazed together the space between the inside and the outside forearm rods is 5½ inches. A piece of rod 13 inches long is bent into an arch and brazed to the front and rear rods in such a manner as to arch over the injured shoulder. Its purpose is to increase the rigidity of the frame. It should not rest on the shoulder. In heavy individuals a detachable diagonal brace may be applied, as shown in Fig. 131.

The axillary saddle has a thick roll of felt under leather at the top edge, and its upper borders are sewed firmly to the acromial borders of the shoulder saddle.

If the splint is to be worn night and day, a strip of thick leather, 3 inches wide and 14 inches long, padded with felt, is sewed on between the rear rod and the body.

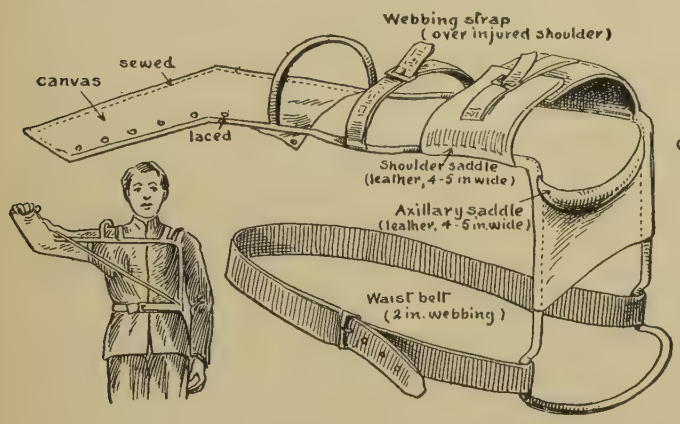


Fig. 130.—Arm-abduction splint complete.

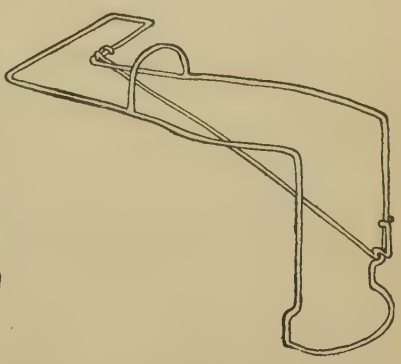


Fig. 131.—Arm-abduction splint with detachable brace. For left arm (frame only, rear view).

Fractures of the Humerus, the Anatomical Neck.—Gr. *ἀνά* apart + *τέμνειν* to cut. See Fractures of the Humerus.

Condyles.—L. *con'dylus*, knuckle. See Fractures of the Elbow.

Epicondyle.—Gr. *ἐπί* upon + *κόνδυλος* knuckle. See Fractures of the Elbow.

Lower End.—See Fractures of the Elbow.

Shaft.—See Fractures of the Humerus.

Supracondyloid.—L. *su'pra*, above; Gr. *κόνδυλος* knuckle + *εἶδος* form. See Fractures of the Elbow.

Surgical Neck.—L. *chirur'gia*, from Gr. *χείρ* hand + *ἔργον* work. See Fractures of the Humerus

T-Shaped, in the Elbow Joint.—See Fractures of the Elbow.

Tuberosities.—L. *tuberos'itas*, eminence. See Fractures of the Humerus.

Y-Shaped, into the Elbow Joint.—See Fractures of the Elbow.

Fractures of the Hyoid Bone.—Gr. *ὑοειδής* U-shaped. The resulting symptoms are local swelling and ecchymosis, dyspnœa, cough, dysphonia, dysphagia, and local pain on opening the mouth or protruding the tongue.

Reduce the fracture by means of a finger in the mouth and the other hand upon the

outside. Keep an ice-bag over the bone. Feed the patient per rectum (see Rectal Feeding in Part 1) for a time, and warn him not to speak or whisper for a week. A Thomas collar (see under Torticollis) may be employed as a splint.

Fractures, Idiopathic.—Gr. *ἴδιος own* + *πάθος disease*. See Fragilitas Ossium, in Part 1.

Fractures of the Inferior Maxilla.—L., lower jaw. See Fractures of the Lower Jaw.

Internal Condyle of the Humerus.—L. *con'dylus*, knuckle. See Fractures of the Elbow.

Epicondyle of the Humerus.—Gr. *επί* upon + *κόνδυλος* knuckle. See Fractures of the Elbow.

Jaw, Lower.—See Fractures of the Lower Jaw.

Upper.—See Fractures of the Upper Jaw.

Fractures of the Knee.—Consider, in injuries at the knee, the following possibilities: sprain, fracture of the lower end of the femur, separation of the lower femoral epiphysis, fracture of the patella, dislocation of the patella, dislocation of the tibia, fracture of the upper end of the tibia, fracture of the upper end of the fibula, dislocation of a semilunar cartilage, rupture of the ligamentum patellæ.

Fractures of the Larynx.—Gr. *λάρυγξ* larynx. The symptoms are like those of fracture of the hyoid bone (*q.v.*).

Perform tracheotomy (*q.v.* in Part 1), at once, even though the symptoms are not urgent. Displacement may be corrected later. Warn the patient not to speak or whisper for a week or longer. Rectal feeding (*q.v.* in Part 1) may be required for a time.

Fractures of the Leg, the Lower End; Pott's Fracture.—Fractures of the lower end of the tibia and fibula are all called Pott's fracture.

Pott's fracture is due usually to forcible eversion and abduction of the foot upon the leg; rarely to inversion and adduction. The deformity is one of eversion and backward displacement.

Treatment.—If the swelling is very great, support the elevated leg upon a pillow folded and strapped over the sides of the leg, with a posterior and two lateral wooden splints between the pillow and straps, and defer the reduction of the fracture until later.

After about seven to ten days, when the swelling has subsided, reduce the fracture under anæsthesia. Cleanse, dry, and powder the skin. With the foot strongly inverted and adducted, and properly lifted forward so as to overcome posterior displacement, apply, over roller-bandage sheet-wadding, plaster-of-Paris bandages (*q.v.*) from the toes to the middle of the thigh. Before the plaster has hardened, cut out a longitudinal strip over the anterolateral aspect of the limb, for inspection of the ankle, and hold the splint in place with buckled straps and bandages. Massage the exposed parts daily. When the swelling has disappeared, the patient may be allowed up on crutches. At the end of five or six weeks, the splint may be removed and a bandage applied, and passive movements begun. At the end of two months, gradual weight bearing may be begun. For at least six months thereafter, the longitudinal arch of the foot under the instep should be supported with a pad.

While waiting for the swelling to subside, and until plaster-of-Paris can be secured, one may employ the Dupuytren splint (see Fig. 132). The inner padding of folded

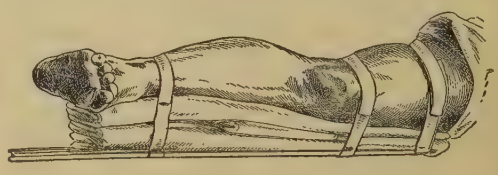


Fig. 132.

sheets extends from the middle of the thigh to just above the internal malleolus, and is thickest below. The wooden splint, the lower end of which is serrated, extends from the middle of the thigh to six inches below the sole of the foot. The splint and padding are strapped and buckled to the limb, above the ankle, above the knee, and at the middle of the thigh. The splint is now bound to the ankle by circular turns of a bandage, passed from the splint to the leg, which is then passed around the foot and the upper serration, while the foot is held adducted, inverted, and lifted forward. The bandage then passes around the ankle, and back over the instep, and around the next serration, and so on, making successive figures-of-eight, taking care also to lift and hold the foot forward with circular turns of the bandage. The whole limb is then placed upon pillows.

As soon as practicable, apply a plaster-of-Paris bandage as before described.

Old healed Pott's fractures, with lateral or backward displacement, are corrected by means of osteotomy of the tibia and fibula.

Fractures of the Leg, the Shaft.—Com-

pare the lengths of the two tibiæ, measured from the upper border of the inner tuberosity of the tibia to the lower border of the inner malleolus.

Bathe the whole limb with soap and warm water, dry, bathe with alcohol, dry thoroughly, and dust with talcum powder. Open blebs aseptically, and cover them with sterile boric acid and sterile gauze. If there is much swelling and displacement, wait a week or ten days, until the swelling has subsided, before applying the permanent dressing. In the meantime, support the elevated leg upon a pillow folded and strapped over the sides of the leg, with a posterior and two lateral wooden splints between the pillow and straps.

After the swelling has subsided, reduce the fracture under anæsthesia. See that the inner side of the great toe, the middle of the patella, and the anterior superior spine of the ilium are in the same straight line, and that the foot is at right angles with the leg and a little adducted; and guard against backward bowing.

Now apply, over an abundance of sheet-wadding (applied like a bandage) or a flannel bandage, a light plaster-of-Paris bandage (*q.v.*), reinforced with strips of tin or wet cypress wood, from the toes to the middle of the thigh. Split the plaster anteriorly before it has hardened. If, when the case is first seen, there is little or no swelling or displacement, this splint may be applied at once. Keep the limb elevated and watch the circulation.

After about two weeks, when the splint has become loose, either apply a new one, or cut off a strip from the old one, and draw it together tighter. Cover the cut edges with adhesive plaster to prevent crumbling.

At the end of four or five weeks, or when union has occurred, get the patient up on crutches and begin daily massage and passive and active movements.

At about the eighth week, omit the splint, bandage the leg from the toes to the knee, and allow a little weight bearing.

At about the tenth to twelfth week, allow walking with a cane.

Another method of immobilization is by means of Cabot's posterior wire-splint. The splint, made of wire about a quarter of an inch thick, extends from the sole of the foot to above the middle of the thigh. It is narrow below and broad above, and has a foot-piece at right angles with the leg. The ends of the wire are wound together with thin copper wire or solder. The wire itself is wound with sheet-wadding and a bandage, and then the bandage is carried around the frame as a whole. The splint is carefully padded to conform with the posterior contour of the limb. Lateral padded wooden splints, extending from end to end of the posterior wire-splint, are attached with straps and buckles. A ring is placed beneath the heel, or the latter is slung from its sides to the foot-piece with adhesive plaster. The foot is strapped to the foot-piece with adhesive plaster.

If displacement tends to recur, one may employ traction by means of Buck's extension (*q.v.*); but in such cases (due to obliquity of the fracture or the interposition of soft parts), it is probably best to suture the bone fragments with silver or bronze aluminum wire. One should wait about ten days for the traumatized tissues to recover somewhat, before operating. Union is slower in cases operated upon. Great swelling, which threatens gangrene, is best treated by exposure of the fracture and suturing of the fragments.

Some employ, for traction purposes, screws introduced into the lower fragment above the malleoli to a depth of 2 to 3 cm.

The Thomas splint, (see Fig. 140), bent at the knee to 30° to 45°, is very useful. The leather portion should be kept soft with saddle soap and the iron bars smeared with vaseline. The splint is applied as follows: After applying adhesive strips for traction, as described for Buck's extension (*q.v.*), an assistant, grasping the heel of the injured limb with his right hand and the forefoot with his left, exerts steady traction, while another assistant supports the fracture above and below. The physician now threads on the splint, the assistant who holds the foot removing and reapplying the upper and lower hands alternately to allow the ring to be passed over the foot. The ring is pushed up securely against the buttock, care being taken to keep the notched transverse bar horizontal. The second assistant continues to support the fracture. The traction adhesive strips with interposed spreader are fastened to the notched transverse bar. Supporting flannel slings are fastened beneath the knee, ankle and calf, and to prevent the leg rising off the splint, the centre of a bandage is placed across the leg, just below the knee, and its ends carried down between the leg and splint and up outside the bars and tied above the leg. Coaptation splints may now be applied above and below the limb and held in place by bandages carried around the limb outside the bars of the splint. Sinclair's reversible stirrup is sprung into

the splint above the ankle, with its foot toward the bed, and a bandage is applied in the form of a figure-of-eight, to prevent lateral movement of the foot. A pad should be inserted between the ring and the outer side of the thigh to serve as a wedge and prevent undue movement.

Open fractures should be treated as follows: Wash the skin with soap, brush, and hot water, shave, and rinse thoroughly, and wash the wound with hot water with extreme thoroughness, using the gloved fingers and small gauze swabs held in forceps. Then, if deemed important, irrigate with bichloride solution, 1 : 5000. Do not remove bone fragments unless they are altogether loose. Suture the bones with silver or bronze aluminum wire. Exsect devitalized tissue (see Wounds, in Part 1). Douche the wound thoroughly again with hot water, and close, leaving in, perhaps, a small drain for twenty-four hours. Immobilize the limb.

Fractures of the Lower End of the Femur.—See Fractures of the Femur, the Shaft.

Fibula.—L. *fib'ula*, buckle. See Fractures of the Leg, the Lower End.

Humerus.—L. *hu'merus*, upper arm bone. See Fractures of the Elbow.

Leg.—See Fractures of the Leg, the Lower End.

Radius.—See Fractures of the Radius, the Lower End.

Tibia.—See Fractures of the Leg, the Lower End.

Fractures of the Lower Jaw.—Reduce the fracture carefully, and hold it in place temporarily by means of the four-tailed bandage to the chin (see Bandaging).

If wiring of the teeth on each side of the fracture with silver wire (No. 26 gauge German silver wire) is deemed sufficient, include as many teeth as possible and not only the two teeth adjoining the fracture But this method of treatment is usually inefficient, the following method being the best:

Dental composition is softened in hot water, and then placed into metal modelling or impression cups, one for the upper jaw and one for the lower jaw. The surface of the composition is then warmed again, and an impression of the teeth and alveolar border of both jaws made. From these two molds are made plaster-of Paris casts. The cast of the lower jaw is cut along the line of fracture with a fine saw, and the fracture thus reproduced is reduced so that the casts of the two jaws will appose properly. The sawed portions are held together with plaster cream. Both casts are then put upon an articulator, and a vulcanite or aluminum splint made from the lower jaw cast. This work is done by a dentist.

If the fracture is near the angle of the jaw, the interdental splint must be reinforced by means of external metal contrivances for holding the fragments more efficiently in place.

If the fracture is behind the molar teeth, a dental splint is, of course, impracticable. For such a fracture one may employ an external pad and a metal chin-piece, held in place by straps and buckles. Such an appliance must be repeatedly adjusted so as to keep the fragments in place.

Wiring the bone fragments with fine silver or bronze aluminum wire is sometimes the best method of treatment. The skin incision should be made a little below and parallel with the lower border of the lower jaw.

Open abscesses through the mouth, if possible.

Fractures of the Malar Bone.—L. *ma'la*, cheek. Under general anæsthesia, attempt to raise the depressed fragment from inside the cheek with a blunt instrument. If this is impossible, elevate the fragment through an external incision by means of a blunt hook, steel elevator, or gimlet. Lothrop recommends that the antrum be opened by way of the canine fossa, the fragments raised by means of a curved steel urethral sound, and the antrum packed with narrow strips of gauze, which is not to be removed for four or five days, the mouth and nose being kept scrupulously clean with alkaline antiseptic solution, such as Dobell's solution (*q.v.* in Part 11).

Fractures of the Maxilla, Inferior.—L., lower jaw. See Fractures of the Lower Jaw.

Superior.—L., upper jaw. See Fractures of the Upper Jaw.

Fractures of the Metacarpal Bones.—Gr. *μετά* after + *καρπός* wrist. After reduction of the fracture by traction and pressure, and careful cleansing, drying, and powdering of the skin, place a rubber tube on each side of the fractured bone posteriorly, and hold the rubber tubes in place by straps of adhesive plaster, one around the middle of the hand and another around the wrist. Then pad the palm and dorsum of the hand, or employ as a palmar splint, a roller bandage grasped by the fingers and thumb; hold the pads in place with adhesive straps, and cover the whole with a bandage.

If displacement tends to recur, employ traction upon the corresponding finger by means of side strips of adhesive plaster,

fastened to the finger by circular and oblique straps, and attached to a long padded palmar splint which extends beyond the finger and is attached to the wrist with adhesive plaster.

Bennet's fracture through the base of the metacarpal bone of the thumb is best strapped and bandaged, in an abducted and extended position, to a palmar splint which extends from the tip of the thumb to the ulnar side of the wrist.

Fractures of the Metatarsal Bones.—Gr. *μετά* after + *ταρσός* tarsus. Remember, in interpreting a skiagram, the possible presence of a separate os intermetatarseum at the base of the first or second metatarsal bone, or of a separate tuberosity of the fifth metatarsal bone.

After cleansing, drying, and powdering the skin, immobilize the foot for four weeks with a plaster-of-Paris bandage, (*q.v.*), from the toes to the middle of the leg, applied over sheet-wadding. Pad the instep on allowing the patient to walk.

Fractures of the Nasal Bones.—L. *nas'us*, nose. See Fractures of the Nose.

Neck of the Femur.—See Fractures of the Femoral Neck.

Humerus, the Anatomical Neck.—Gr. *ἀνά* apart + *τέμνειν* to cut. See Fractures of the Humerus.

Surgical Neck.—L. *chirur'gia*, from Gr. *χείρ* hand + *ἔργον* work. See Fractures of the Humerus.

Neck of the Radius.—See Fractures of the Elbow.

Nerve Injuries Complicating.—See Introduction at the beginning of Fractures.

Fractures of the Nose.—Examine the nasal septum under cocaine anæsthesia (4 per cent.), for deviation and hæmatoma. A small hæmatoma may be left alone, but a large one should be freely incised, by means of a unilateral, horizontal incision, made as low down as possible. A hæmatoma is liable to infection.

Replace, under general anæsthesia, a deviated septum and displaced nasal bone fragments, by means of external manipulation and the internal use of Roe's elevator or a similar instrument, such as a pair of narrow-bladed hæmostatic forceps well protected by gauze.

To retain the fragments in place, employ tight, high, gauze packing for fractures high up, changed daily for about four days, and Asch's tubes for low fractures. Keep the nasal cavity cleansed with a warm alkaline solution such as that of Seiler or Dobell (see Part 11), employed twice daily.

Efficient external nasal splints are those of Cobb and of Coolidge.

Fractures of the Olecranon.—Gr. *ὠλέκρανον* See Fractures of the Elbow.

Open.—See Introduction, at the beginning of Fractures.

Os Calcis.—L. See Fractures of the Tarsal Bones.

Fractures of the Patella.—L. *patel'la*, pan. To hasten the absorption of the blood in the joint, elevate the limb upon pillows, and apply firm even compression by means of an elastic rubber bandage kept on for forty-eight hours; or moisten two sea sponges, dry them under pressure, so as to flatten them, and bandage them to the sides and over the knee, and then pour on cold water; the resulting swelling of the sponges provides even and firm compression. Change the sponges after twelve to twenty-four hours (Scudder). Massage practiced for fifteen to thirty minutes twice daily also promotes absorption.

After the joint effusion has subsided, extend the leg upon a wooden ham-splint, a little wider than the limb, extending from the buttock to just above the ankle, and padded so as to conform with the posterior surface of the thigh, knee, and leg. Strap the limb to the splint at both ends of the latter and below the knee. Bandage the lower half of the splint to the leg, and keep the foot at right angles with the leg. Instead of the wooden splint, one may use plaster-of-Paris (*q.v.*).

Fix the lower fragment by means of obliquely placed overlapping strips of adhesive plaster, fastened to the ham-splint above the fragment. Then elevate the whole limb upon an inclined plane, in order to relax the quadriceps femoris muscle, draw down the upper fragment by means of obliquely placed overlapping adhesive strips, fastened to the ham-splint below the fragment, and place another strip transversely over the line of fracture, in order to prevent tilting of the fragments. Hold the quadriceps muscle by means of padded coaption splints, and by straps encircling the ham-splint. Massage the quadriceps muscle daily from the beginning, to prevent atrophy.

At the end of six weeks, when union is secured, remove the above apparatus, and apply a plaster-of-Paris bandage (*q.v.*) from the ankle to the groin. Split this in the median line before hardening, so that it can be removed for the purpose of cleanliness and massage, and cover the cut edges with adhesive plaster to prevent crumbling. The splint may be covered with stockinette,

and leather strips containing lacing hooks stitched to each cut edge.

Allow the patient up in the splint on crutches, and permit slight weight-bearing. Begin also at this time passive and active movements. At the end of eight weeks, allow the patient about with a cane and a supporting bandage extending from the calf to the middle of the thigh. Omit the latter after six months. Do not allow flexion of the knee while walking for six months.

If the fracture is open, or compound, thus exposing the knee joint (the synovial membrane of the knee joint is attached to the posterior surface of the patella), scrub and sterilize the skin and wound thoroughly, lay the joint open by a curved transverse incision, and cleanse and irrigate the parts, including the joint, thoroughly with hot sterile water, paying particular attention to the posterior recesses of the joint. Remove small loose bone fragments. Then suture the fragments with chromicized catgut, or better, kangaroo tendon, repair lateral tears in the aponeurosis with the same material, and close the skin wound with fine catgut. Immobilize the joint with plaster-of-Paris (*q.v.*) from the toes to the hip.

Scudder begins massage and passive movements at the end of two weeks, allows the patient about with a light plaster splint and a cane at the end of three weeks, and replaces the plaster with a bandage after about six weeks. Eisendrath does not remove the plaster splint or begin massage for six weeks. Ridlon does not advocate early massage and motion in the treatment of any fracture.

The operative treatment of closed patellar fractures is very effectual, but strict asepsis is imperative. Some wait seven days for the swelling to subside before operating, others operate immediately. The operation is performed as described above. Eisendrath says: "Operation is contraindicated in elderly patients, or where the contusion of the skin is such as to endanger the possibility of obtaining primary union of the external wound."

Fractures, Pathologic.—Gr. *πάθος* disease + *λόγος* discourse. See Fragilitas Ossium, in Part 1.

Fractures of the Pelvis.—L. *pelv'is*, basin. Do not neglect a vaginal or rectal examination.

If wiring of the bone fragments is not performed, treat the case as follows: Immobilize the fracture by means of a wide band of adhesive plaster or a wide muslin binder encircling the pelvis, taking care not to produce displacement thereby, and place the patient on a Bradford frame, to which the trunk and thighs may be bound with towels. The thighs and knees should be bound together.

A long wooden T-splint (see Fractures of the Femoral Neck) reaching from the axilla to the sole of the foot may be employed for immobilization purposes, and if necessary, traction may be exerted upon the thighs, as described under Fractures of the Femoral Neck.

If the urethra is ruptured, with resulting difficulty of urination, or retention, and urethral hemorrhage, and if an attempt at catheterization is unsuccessful, make a perineal incision, find the proximal end of the urethra, pass a catheter through the entire length of the urethra, and drain the perineal wound. Perform suprapubic aspiration if the proximal end of the urethra cannot be found (see Injuries of the Urethra, Part 3).

If rupture of the bladder is suspected, do an exploratory laparotomy (see Bladder Injuries, Part 3).

Administer morphine for pain. Keep the patient in bed for six to eight weeks.

Fractures of the Phalanges of the Fingers.—Gr. *φάλαγξ* phalanx. After cleansing, drying, and powdering the skin, and reducing the fracture, apply a padded palmar splint extending from the tip of the finger to the ball of the hand, and hold it in place with adhesive straps. Then cover the finger with a finger-cot. Use the other fingers as side splints, with powder and pieces of cloth protecting contiguous surfaces. Cover the whole with a bandage. Guard against rotation or lateral deviation of the distal fragment.

Massage and passive motion should be begun at the end of the third week, in articular fractures, in order to prevent ankylosis.

Fractures of the Phalanges of the Toes.—After cleansing, drying, and powdering the skin, and reducing the fracture, apply a padded wooden plantar splint covering the entire sole of the foot and the injured toe, and hold it in place with adhesive plaster straps. It is sometimes best to immobilize the ankle-joint.

Fracture, Pott's.—See Fractures of the Leg, the Lower End.

Fractures of the Radius, the Head.—L. *ra'dius*, spoke. See Fractures of the Elbow.

Fractures of the Radius, the Lower End (Colles's Fracture); and Separation of the Lower Radial Epiphysis.—L. *ra'dius*, spoke Gr. *ἐπί* upon + *φύειν* to grow. Colles's frac-

ture is a fracture of the lower end of the radius, with displacement of the lower fragment backward, and the end of the upper fragment forward, resulting in the so-called silver-fork deformity. The displacement is often an angular one Sometimes it is the reverse of that described.

Separation of the lower radial epiphysis occurs before the twentieth year (see Fractures of the Wrist).

Under anæsthesia, reduce the fracture (after forcibly breaking up impaction) by traction upon the wrist and pressure of the two thumbs upon the dorsum and radial side of the lower fragment.

Cleanse, dry, and powder the skin, and after placing a pad over the dorsum of the lower fragment to hold it in place, apply, with the hand and forearm semipronated, a padded posterior splint (of thin splint wood), extending from below the elbow to the heads of the metacarpal bones, with a semicircular piece cut out to accommodate the lower end of the ulna. Then apply a padded anterior splint extending between the same points, and cut out at its lower end to clear the ball of the thumb. The splints should be a little wider than the forearm. Pad the anterior splint accurately to conform with the contour of the forearm and hand. Hold the splints in place with adhesive plaster straps, and cover the whole with a bandage, leaving the fingers free. Support the whole length of the forearm and hand in a sling. Instruct the patient to move the fingers frequently.

At the end of the fourth week, omit the splints, support the wrist in a sling so that the hand hangs adducted, and begin massage, and passive and active movements. Some begin massage in the second week.

Instead of the padded wooden splint, one may employ a split plaster-of-Paris splint (*q.v.*), or a volar plaster splint, with the wrist in extension ("cock up" splint), and leaving the fingers free. The splint may be removed daily and the parts massaged.

Fractures of the Radius, the Neck.—See Fractures of the Elbow.

Shaft.—See Fractures of the Forearm, the Shaft.

Fractures of the Ribs.—Pain on breathing is present. Local pain and sometimes crepitus are elicited by antero-posterior and lateral compression of the chest.

Reduce the fracture, if there is displacement; and after cleansing, shaving, and drying the skin, apply from below upward, while the patient is exhaling deeply, several broad overlapping adhesive plaster swathes, extending from beyond the spine in back to beyond the sternum in front. Overlap each strip or swathe two-thirds. Cover the nipple with gauze. Cleanse and powder the axilla. A strap may also be passed over the shoulder to advantage. A dose of morphine may be of service.

The occurrence of alarming dyspnœa indicates pneumothorax, and calls for morphine, etc. (see under Tuberculosis, Pulmonary, in Part 1).

Change the adhesive-plaster swathes at least every seven days for about three or four weeks.

Fractures of the Scaphoid Bone.—Gr. *σκάφη* skiff + *εἶδος* form. See Fractures of the Carpal Bones.

Fractures of the Scapula.—L. *scap'ula*, shoulder-blade. After cleansing the skin with soap and warm water, rinsing, drying, sponging with alcohol, drying again, and dusting with talcum powder and protecting apposed skin surfaces with soft pads, apply a Velpeau bandage (*q.v.*) reinforced by adhesive plaster.

In fracture of the acromial process, place a pad over the inner fragment. The Velpeau bandage raises the elbow and outer fragment, and at the same time exerts counter-pressure upon the pad over the inner fragment.

Fractures of the Shaft of the Femur.—See Fractures of the Femoral Shaft.

Forearm.—See Fractures of the Forearm, the Shaft.

Humerus.—See Fractures of the Humerus.

Leg.—See Fractures of the Leg, the Shaft.

Fractures of the Shoulder.—Consider, in injuries to the shoulder, the following possibilities: sprain, fractures of the clavicle, dislocations of the clavicle, fractures of the scapula (acromial process, glenoid, or spine), fracture of the surgical neck of the humerus, fracture of the anatomical neck of the humerus, fracture of the tuberosities of the humerus, separation of the upper epiphysis of the humerus, dislocation of the head of the humerus, usually subcoracoid, dislocation and fracture combined.

Compare the lengths of both upper arms, measured from the acromion process to the external condyle. Locate the coracoid process, for the head of the humerus lies directly behind it. The head of the humerus points in the same direction as the internal condyle. Examine, under ether, if necessary, and employ the X-ray, if practicable.

Fractures of the Skull.—See Part 1, General Medicine and Surgery.

Fractures of the Spinal Column.—Handle the patient with the greatest care, to avoid injury to the cord, with resulting motor and sensory paralysis. If paralysis is present, have an X-ray picture taken, and if it shows compression of the cord by displaced bone, an operation should be performed, otherwise not.

The spine may be immobilized by means of sandbags, extension apparatus, plaster jacket, or braces (see Pott's Disease). In applying a plaster jacket, the patient is suspended prone in a hammock, or between two tables, so as to produce extension and correct deformity. An anæsthetic may be required.

Enjoin absolute rest, including feeding with a spoon and the use of the bed-pan and urinal. Guard against bed-sores (*q.v.*, in Part 1); and also against cystitis, in the presence of retention, by means of the administration of urotropin, gr. vii, t.i.d., regular aseptic catheterization, and irrigation of the bladder with warm sterile boric acid solution, a heaping teaspoonful to the pint. Employ aperients and enemata for the bowels, if required. The diet should be bland and nutritious.

Keep the muscles in tone by means of massage, electricity, and passive movements (see also Hæmatomyelia, in, Part 1).

Fractures of the Spine of the Scapula.—L. *spiña*, spine. See Fractures of the Scapula.

Tibia.—See under Displacement of a Semilunar Cartilage.

Fracture, Spontaneous.—L. *spontañeus*, voluntary. See Fragilitas Ossium, in Part 1.

Fractures of the Sternum.—L.; Gr. στέρνον breast-bone. Reduce the fracture in the following manner: Place the patient supine upon a table, with the head hanging extended over the edge of the table. Then raise the arms above the head and rotate them outward, while an assistant steadies the lower thorax and presses upon the lower fragment. Then apply broad adhesive-plaster swathes about the chest, held by adhesive straps across the shoulders. Apply an ice-bag. Keep the patient in bed for three weeks; then allow him up carefully, wearing, for two months, a brace such as is used in high dorsal Pott's disease.

Operative treatment is sometimes the best, care being taken not to injure the membrane on the posterior surface of the sternum, The mere presence of deformity, however, does not demand operation. The latter is indicated if serious symptoms are present.

Fractures of the Styloid Process of the Ulna.—L. *sty'lus*, pen + Gr. εἶδος form. See Fractures of the Elbow.

Subtrochanteric, of the Femur.—L. *sub-* under + L., Gr. τροχαντήρ runner. See Fractures of the Femoral Shaft.

Superior Maxilla.—L., upper jaw. See Fractures of the Upper Jaw.

Supracondyloid, of the Femur.—L. *sup'ra*, above + *con'dylus*, knuckle. See under Fractures of the Femoral Shaft.

Fractures, Supracondyloid, of the Humerus.—L. *sup'ra-* above + *con'dylus*, knuckle. See Fractures of the Elbow.

Surgical Neck of the Humerus.—L. *chirur'gia*, from Gr. χείρ hand + ἔργον work. See Fractures of the Humerus.

Fractures of the Tarsal Bones.—L.; Gr. ταρσός instep. The os calcis and astragalus are usually the only bones ever fractured. Remember, in interpreting a skiagram, that there is often present, normally, posterior to the astragalus, a little bone called the os trigonum.

Thoroughly cleanse the skin with soap and hot water, dry, sponge with alcohol, dry, and dust with talcum powder. Support the elevated leg and foot upon a pillow, folded and strapped over the sides of the leg and foot, with a posterior and two lateral wooden splints between the pillow and straps, or place the foot in a well-padded fracture box (Fig. 133).

Fig. 133.—Lateral view of fracture box.

After about eight to ten days, when the swelling has subsided, apply over sheet wadding, with the foot flexed at right angles with the leg, or in fractures of the os calcis usually plantar flexed, a plaster-of-Paris bandage (*q.v.*) from the toes to just below the knee, and split it before it hardens. Begin now to massage the parts daily.

At the end of eight weeks, omit the plaster cast, begin passive and active movements, and allow gradual weight bearing. Pad the instep.

Suture of the fragments with kangaroo tendon, or the removal of the smaller fragments, is sometimes the treatment of choice.

Fractures of the Thigh.—See Fractures of the Femur.

Tibia, the Lower End.—L. *tibia.* See Fractures of the Leg, the Lower End.

Shaft.—See Fractures of the Leg, the Shaft.

Spine.—L. *spiña*, spine. See under Displacement of a Semilunar Cartilage.

Upper End.—See Fractures of the Leg, the Shaft.

Fractures of the Trachea.—L.; Gr. τραχεῖα rough. The symptoms are like those of fracture of the larynx (*q.v.*).

Perform tracheotomy (*q.v.* in Part 1), and aspirate the effused blood from the trachea.

Fractures of the Trochanters.—L.; Gr. τροχαντήρ runner. See Fractures of the Femoral Shaft.

T-Shaped, of the Humerus into the Elbow Joint.—See Fractures of the Elbow.

Tuberosities of the Humerus.—See Fractures of the Humerus.

Ulna.—L. *ul'na.* See Fractures of the Elbow, and Fractures of the Forearm, the Shaft.

Upper End of the Fibula.—See Fractures of the Leg, the Shaft.

Humerus.—See Fractures of the Humerus.

Tibia.—See Fractures of the Leg, the Shaft.

Ulna.—See Fractures of the Elbow.

Fractures of the Upper Jaw.—Under general anæsthesia, approach depressed bone fragments by way of openings in the gums, using blunt instruments to raise the fragments. If unsuccessful, enter the antrum by way of the upper part of the canine fossa, elevate the fragments with a curved steel urethral sound, and pack the antrum with narrow strips of gauze, which is not to be removed for four or five days, the mouth and nose being kept scrupulously clean with alkaline antiseptic solutions, such as that of Seiler, or Dobell (*q.v.* in Part 11). Hold the jaws together by means of an external bandage. Loose teeth may eventually become firmly attached.

If the fragments tend to become displaced, have a dentist make a mold in dental composition of the teeth and alveolar border of the lower jaw, from which to make a rubber splint. When applied, this splint, with the lower jaw, should be held snugly up against the teeth of the upper jaw by means of an external bandage. The patient is fed through the nose by means of a rubber catheter with rubber tubing and funnel attached. The mouth and nose are kept scrupulously clean, and the mouth is drained of saliva with strips of gauze.

Fractures of the Vertebræ.—L. *vert'ebra*, vertebra. See Fractures of the Spinal Column.

Fractures of the Wrist.—Consider, in injuries of the wrist, the following possibilities: sprain, Colles's fracture of the lower end of the radius, fracture of both radius and ulna, fracture of the styloid process of the ulna, fractures of the carpal bones, dislocations of the carpal bones, dislocations of the wrist joint, and dislocations of the carpo-metacarpal joints.

Fractures, Y-Shaped, of the Humerus into the Elbow Joint.—See Fractures of the Elbow.

Fragilitas Ossium.—See Part 1, General Medicine and Surgery.

Funnel-Chest.—**Causes.**—Rickets; possibly adenoids; Pott's disease; certain occupations, such as that of the cobbler; congenital anomaly ("practically always" the cause).

Treatment.—Any possible causal influence should, of course, be corrected, and respiratory gymnastics may be prescribed; but, says H. L. Taylor, "Even when extreme it does not interfere with health or strength, and is incurable."

Gangrene Complicating Fracture.—Gr. γάγγραινα mortification. See General Considerations, in the beginning of the subject of Fractures.

Gas Bacillus Infection Complicating Fracture.—See Infection, in Part 1.

Genu Recurvatum.—L. *gen'u*, knee; *recurva'tum*, backward bending. Habitual hyperextension of the knee; back-knee.

Causes.—Congenital anomaly; anterior poliomyelitis; rickets; tabes; traction upon the leg in the treatment of hip disease; traumatism; inflammation of the knee joint; deforming disease of the femur or tibia; pes equinus and equino-varus; loose knee from whatever cause.

Treatment.—In the congenital variety, knead and massage the contracted muscles, and employ passive exercise and forcible flexion (under anæsthesia, if necessary); or flex the leg gradually by strapping it to a frame bent under the knee.

When the child walks, have it wear for some years a light brace permitting only normal or a little less than normal extension, and no lateral movement.

The brace may be used in cases due to

other causes. If the femur or tibia is deformed, an osteotomy is required.

Genu Valgum.—See Knock-Knee.

Varum.—See Bow-Leg.

Glenoid, Fractures of the.—Gr. γλήνη socket + εἶδος form. See Fractures of the Scapula.

Gluteal Bursitis.—Gr. γλουτός buttock. See Bursitis.

Gonorrhœal Arthritis.—Gr. γονή semen + ῥεῖν to flow. See under Arthritis.

Gout, Rheumatic.—See Arthritis Deformans.

Great Toe, Abduction of the.—L. *ab*, from + *duc'ere*, to draw. See Hallux Valgus.

Great Toe-Joint, Painful.—**Causes.**—Hallux rigidus; weak foot; pressure of the shoe.

The treatment is the same as for Hallux Rigidus.

Great Toe, Rigid or Stiff.—See Hallux Rigidus.

Gunshot Fractures.—See General Considerations, in the beginning of "Fractures."

Hæmarthrosis.—Gr. αἷμα blood + ἄρθρον joint. See under Arthritis.

Hæmatoma of the Sternomastoid Muscle.—Gr. αἷμα blood + -ωμα tumor. See under Torticollis.

Hæmophiliac Arthritis.—Gr. αἷμα blood + φιλεῖν to love. See under Arthritis.

Hallux Dolorosa.—L. *hal'lux*, great toe; *do'lor*, pain. See Great Toe-Joint, Painful.

Hallux Rigidus.—L. *hal'lux*, great toe; *ri'gidus*, stiff. Stiffness and swelling of the great toe-joint.

Causes.—Trauma (stubbing the toe, etc.); weak or flat-foot.

Treatment.—Attend to the cause. In traumatic cases, the toe may be splinted by means of a long, steel sole-plate, extending the length of the shoe, placed in the shoe or between the layers of the sole.

Excise the joint in intractable cases.

Hallus Valgus.—L. *hal'lux*, great toe; *val'gus*, bent outward. Abduction of the great toe, *i.e.*, away from the mid-line of the body, outward toward the other toes. Bunion is the symptom.

Causes.—Short and narrow stockings and shoes are the immediate cause. Aggravating or predisposing causes are gout, rheumatism, traumatism, and depression of the anterior metatarsal arch (see Anterior Metatarsalgia).

Treatment.—Broad shoes should be worn, and there should be a separate stocking stall for the big toe. Frequent manual adduction should be practiced. A Holden toe-post (a thin, padded metal upright) may be worn between the toes. A depressed anterior or longitudinal arch should be braced (see Anterior Metatarsalgia, and Weak Foot). The Thomas heel (Fig. 134) "replaces to a certain extent the function of the great toe." (H. L. Taylor).

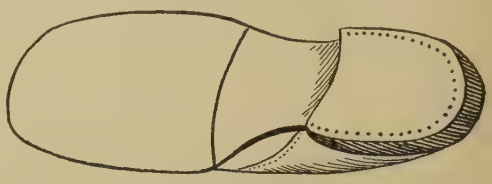


Fig. 134.—Flat-foot shoe with heel prolonged on inner side to support the arch.

In severe cases, an operation, by which the projecting bone (non-articulating portion of the metatarsal head) is removed, is required (consult the standard textbooks).

For inflamed bunion (bursitis), employ rest and hot applications. Later, remove callus, and use a bunion plaster for protection.

Hallux Varus.—L. *hal'lux*, great toe; *var'us*, bent inward, *i.e.*, away from the other toes. See Pigeon-Toe.

Hammer-Toe.—**Causes.**—Short and narrow shoe; congenital anomaly.

Treatment.—In slight cases, strap the toe to a plantar splint, or employ Foote's device. In severe or recurrent cases, divide the dorsal and ventral tendons and the contracted ventral fascia, and apply a splint; or better, resect the joint. Do not amputate the toe.

Hand, Club.—See Club-Hand.

Tuberculosis.—See Tuberculosis of the Long Bones of the Hand.

Heberden's Nodes.—See Arthritis Deformans, the Hypertrophic Type.

Heel, Painful.—See Painful Heel.

Hemorrhage into Joints.—Gr. αἷμα blood + ῥηγνύναι to burst forth. See under Arthritis.

Hip, Congenital Dislocation of the.—See Congenital Dislocation of the Hip.

Disease.—See Hip Tuberculosis.

Dislocation, Congenital.—See Congenital Dislocation of the Hip.

Dislocations, Traumatic.—See Dislocations of the Hip.

Osteochondritis of the.—Gr. ὀστέον bone + χόνδρος cartilage + -ιτις inflammation. See Perthes's Disease.

Hip Tuberculosis; Hip-Disease.—L. *tuber'culum*, nodule. **Synonyms.**—Coxalgia; coxitis (L. *cox'a*, hip; Gr. ἄλγος pain -ιτις inflammation).

The diagnostic features are chronicity; a limp; pain, as a rule, which is usually occasional, and referred to the knee (persistent pain suggests abscess formation); night

cries; restriction of the normal range of motion in every direction, due to muscle spasm, and later also to adhesions and contractions (psoas contraction due to Pott's disease limits extension only); attitude of flexion, abduction, and outward rotation in the early stages, with apparent lengthening, as shown by measuring between the umbilicus and internal malleoli, with the limbs parallel, and usually real shortening as shown by measuring between the anterior superior iliac spines and the internal malleoli (in very acute early cases and late destructive cases the limb is adducted, rotated in or out and flexed, with apparent shortening); atrophy, as shown by comparative circumferential measurements. If the trochanter rises above Nélaton's line ("a line drawn from the lowest point of the anterior superior iliac spine to the most prominent point on the lower and posterior surface of the tuberosity of the ischium"), the shortening is due to bone absorption or pathological dislocation (see also Perthes's disease).

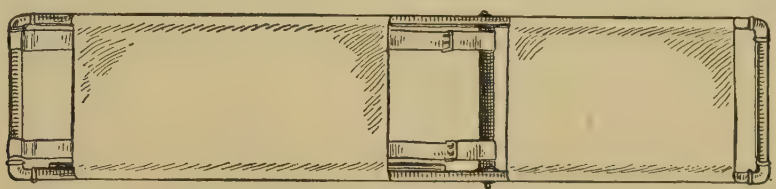


Fig. 135.—Gas-pipe frame. (Bradford and Lovett.)

Prognosis.—From two to four years of active treatment are usually required, followed by two years of protection of the joint.

Treatment.—A correct hygienic regimen is of first importance (consult Tuberculosis, Pulmonary, in Part 1).

Local treatment aims to secure immobilization, separation of the joint surfaces by means of traction, the correction of a faulty attitude, and protection from weight bearing, when the latter is a cause of discomfort.

In acute cases, with much tenderness and muscle spasm, and when abscess threatens or is present, employ recumbency with splinting and traction, until the acute symptoms have quite disappeared, all muscle spasm is overcome, and the limb is straight. Proceed as follows: Fasten the patient upon a Bradford-Lovett frame (Fig. 135) by means of shoulder straps, an abdominal band, and if need be, a perineal counter-traction band, and secure the frame to the top of the bed. Now cover the foot with a flannel bandage from the toes to just above the malleoli, and apply on each side of the limb from the pubes and trochanter to the malleoli, and extending six inches beyond the sole of the foot, a long strip of zinc oxide, or better, moleskin (yellow) adhesive plaster (less irritating than rubber plaster), wide above and narrow below the knee, with the sticky side opposite the ankle and foot covered with muslin or another adhesive strip, to prevent adhesion to the ankle and foot bandage. Hold these long side strips in place by means of two long spiral adhesive strips extending from the ankle to the upper part of the thigh, and other circular strips around the ankle, just above the knee, and around the upper thigh (only partly encircling the limb to avoid constriction). Fasten the ends of the long side strips to a wooden spreader a little broader than the width of the ankle, and through a hole in the centre of the spreader pass a clothes line, and tie the proximal end in a knot for the purpose of traction upon the spreader. Pass the line over a pulley fastened to the end of the bed, and attach to it a weight. Cover the adhesive strapping with a stocking or with an evenly applied bandage extending from the toes to the groin, with its margins stitched to keep it in place (Buck's extension). Traction should be made in the line of the deformity, the pelvis being parallel transversely with the width-line of the bed and the lumbar spine touching or nearly touching the frame. Begin with three to six pounds, and increase the pull gradually, say by a pound a day, up to ten to twelve or more pounds, employing an "amount of pull agreeable to the patient." About three to six pounds is sufficient for a child. The patient should be turned over once daily and bathed with alcohol.

After about a week, let the limb down about half an inch or more, until "the lumbar spine just commences to rise." Repeat this every few days until all the deformity is reduced, two or three weeks being required.

If some deformity persists after muscle spasm has been overcome (due to contracture), and no symptoms of active disease are present, anæsthetize the patient, and with the buttocks on the end of a table, and an assistant holding the sound thigh firmly flexed upon the abdomen, overcome and overcorrect flexion by traction and a gentle

"pump-handle leverage action," taking care not to fracture the neck of the femur, which is apt to be weak from atrophy; correct also adduction and rotation. Then, after applying traction adhesive strips, as before described, apply a long plaster spica, reaching from the ankle to the mammary line, with

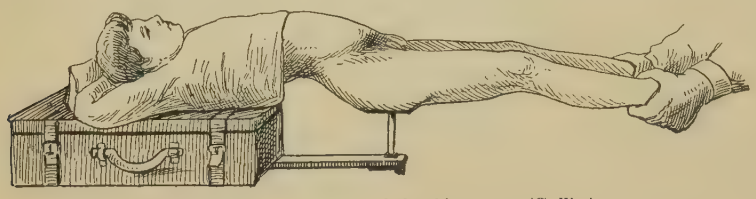


Fig. 136.—Suit case hip and shoulder rest. (Gallic.)

the limb in moderate abduction (15°), full extension, and slight rotation outward. The plaster spica is applied as follows: The trunk and limbs are first enclosed in a close-fitting seamless stockinette or shirting and one or more layers of cotton flannel bandage applied to the limb. Bony prominences such as the femoral condyles, sides of the pelvis, anterior superior iliac spines and thorax, are further protected by cotton wadding. The patient is placed horizontally upon his back, with the arms above the head to expand the thorax, and is supported only at the head, shoulder, and sacrum, with the limbs supported by assistants, traction being made upon the affected limb, with moderate abduction; good hip and shoulder rests are the following, viz., Gallie's suitcase hip and shoulder rest (Fig. 136), Sanderson's portable hip and shoulder rest and extension apparatus (Fig. 137), and Echols hip-rest and traction appliance (Fig. 138.) Then the plaster bandages (*q.v.*) are applied from the

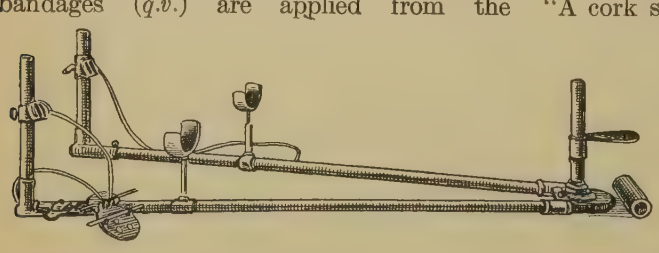


Fig. 138.—Hip-rest and traction appliance. (Echols.)

ankle to the mammary line, covering in the buttock completely, and fitting the shape of the body perfectly. The plaster may be reinforced behind and in front of the hip, and behind the knee with long strips of basswood or malleable steel The plaster may be covered with stockinette and the perineal portion varnished. After the spica has been completed, put the patient to bed with a traction weight of ten pounds or more.

As soon as muscle spasm and pain have disappeared (after several weeks or months), weight bearing (in the plaster spica) is permitted, if it causes no discomfort. If discomfort or muscle spasm is induced, use axillary crutches, with a high shoe (with a 2½ inch thick cork or wooden sole or metal patten) on the sound leg. The ambulatory long plaster spica is best made to include the foot and toes, to avoid œdema. The toes, heel, and malleoli should then be protected by cotton wadding.

Later, as healing occurs, Lorenz's short spica may be substituted for the long spica, the sides of the spica being made to overlap

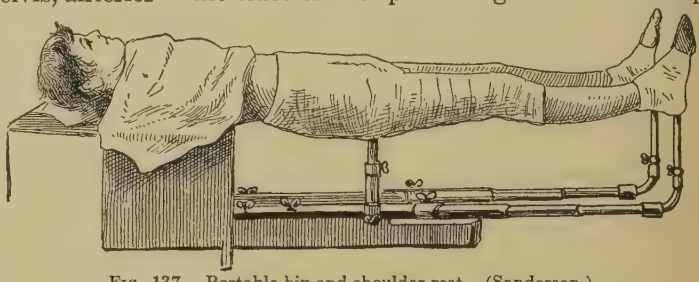


Fig. 137.—Portable hip and shoulder rest. (Sanderson.)

the short ribs and a perineal band fastened to buckles in front and back placed on the sound side to keep this part from slipping upward and thus adducting the affected limb. Moderate abduction (15°) should be maintained. A broad bandage to be used as a "scratcher" should be worn next the skin. "A cork sole of about an inch in thickness may be used on the abducted side to prevent tilting of the pelvis." (Chiefly from Whitman.)

If, when first seen, the disease is not active, nor of the destructive type, no infiltration of the tissues and no sinuses are present, but deformity is present, yet not of long standing, Whitman advocates immediate reduction of the deformity under anæsthesia, followed by traction in bed (with a weight of ten or more pounds), with the limb and trunk encased in a long plaster spica, in full extension and 15° of abduction, until all acute symptoms have subsided, that is, for "several weeks or months." Then weight

bearing is tested, and the case treated as before described.

If the disease, when first seen, is not acute, and no deformity is present (the usual case nowadays), recumbency is not called for, but the plaster spica should be employed.

In the convalescent stage (afternoon temperature normal; pain, tenderness and muscle spasm absent), Lorenz's short spica holding the limb in moderate abduction, may be used, as before described. This should be worn at least two years, and then gradually discontinued. Should muscle spasm recur, return to treatment by traction or plaster-splint.

After a cure is established, train the patient "to walk with equal steps," and correct any tendency toward flexion and adduction by "persistent stretching in the direction of abduction and extension," and, if necessary, by a return to the use of splinting apparatus.

In adults, "early excision or arthrotomy to induce ankylosis may be advisable to hasten the cure of the disease." (Whitman).

If, when first seen, upward displacement is present, or ankylosis in a deformed attitude, first endeavor to cure the disease, then correct or lessen the deformity by operative measures, viz., subtrochanteric osteotomy, or forcible correction with or without tenotomy; or excision of the joint.

Treatment of Abscess and Sinuses. — Treat abscess cases by recumbency and traction. If, however, the abscess continues to enlarge, incise it freely in two or more places, under the strictest asepsis, through the thickest portion of intervening tissue and skin (avoid incising through thin skin), and "opposite the least dependent point," to obviate drainage. Then dissect or curette out the walls of the abscess cavity and all necrosed tissue with a flushing curette, wipe dry with iodoform gauze on a clamp, sew the wound up tight with deep absorbable sutures, leaving no dead spaces, and apply a firm, dry dressing. The injection of iodoform emulsion (10 per cent. in glycerine or oil, 10 c.c. every two weeks, or less often, following aspiration) is not generally recommended.

If infection with pus organisms has occurred, provide drainage by means of rubber tubes. "If there is much dead bone in the cavity, this should be removed by curettage or excision of the joint" (Primrose). The latter is indicated in the presence of progressive failure of health, extension of the infectious process, or inability to provide adequate drainage. Amputation is the very last resort.

Sinuses, as well as abscess cavities, unless serving as drains, are best excised or thoroughly curetted; or they may be injected with Beck's mixture of iodoform and vaseline, 1:3, or Beck's bismuth paste (see Part 11), after drying with gauze. The injections are made every three days through a dry, sterile, glass syringe. The paste is not to be used when the X-rays show a sequestrum; and it should be used with caution in large pus sacs which may become filled with residuary bismuth, for fear of poisoning. It acts best in old sinuses with little discharge.

In sinuses which serve as drains, introduce a rubber tube or catheter with side-windows. Bier's suction cups may be applied for three to five minutes at three to five minute intervals for half an hour each day. Balsam of Peru, 10 per cent. in castor-oil, is recommended for ulcers. The X-rays and direct sunlight may be beneficial. Rollier's method of heliotherapy "consists in beginning above at the neck, with the head shielded, and below at the feet, exposing from two to four inches of the body surface for five minutes twice daily, increasing time and surface at this rate until the entire body is exposed. Time and insolation are then increased according to the tolerance of the individual. Some do better with eight to ten hours under the direct rays, others can stand only three or four hours." In sinus cases, the discharge is markedly increased during the first week or more of insolation, but then declines, with ultimate closure of the sinus.

Hollow or Contracted Foot; Claw-Foot; Talipes Cavus.—L. *ta'lus*, ankle + *pes* foot; *ca'vum*, a hollow. **Causes.**—Congenital anomaly; high-heeled shoes; too short shoes; paralysis (anterior poliomyelitis; neuritis); gout or rheumatism; sprain or fracture of the ankle; professional dancing (upon the ball of the toes); habitual posture due to shortening of the limb.

Treatment.—In slight cases, stretch the contracted tissues by forcible manipulation, and have the patient wear a properly fitting footplate (see under Weak Foot), for the relief of discomfort.

In more severe cases it is necessary to divide the contracted tissues in the sole of the foot, and, if necessary, the toe extensor tendons, attaching the latter to the distal ends of the metatarsals. If resistance to dorsal flexion persists, the tendo Achillis should also be divided. Then correct the deformity, using a Thomas wrench, if necessary, and apply a plaster bandage (*q.v.*),

with a thin board upon the sole of the foot. After six weeks or longer, during which time the patient should walk about, remove the cast, and have the patient wear in the shoe a flat steel plate with strong leather straps passing over the dorsum of the foot. Massage and active and passive stretching exercises should also be employed. Severe cases may require excision of the heads of all of the metatarsals, a cuneiform osteotomy of the up-curved metatarsus, or excision of the astragalus.

Housemaid's Knee.—See Bursitis.

Humerus, Dislocations of the.—L. See Dislocations of the Humerus.

Fractures of the.—See Fractures of the Humerus, and Fractures of the Elbow.

Humpback.—See Kyphosis.

Hydrarthrosis, Intermittent.—Gr. ὕδωρ water + ἄρθρον joint. See Arthritis.

Hydrops Articulorum Intermittens.—L.; Gr. ὕδρωψ dropsy; L. *artic'ulus*, little joint; *in'ter*, between + *mit'tere*, to send. See Arthritis.

Hyoid Bone, Fractures of the.—Gr. ὑοειδής U-shaped. See Fractures of the Hyoid Bone.

Hyperextension of the Knee.—Gr. ὑπέρ over + L. *exten'sio*. See Genu Recurvation.

Hypertrophic Arthritis Deformans of the Spine.—Gr. ὑπέρ over + τροφή nutrition. See Spondylitis Deformans.

Pulmonary Arthropathy.—L. *pul'mo*, lung; Gr. ἄρθρον joint + πάθος disease. See under Arthritis.

Type of Arthritis Deformans.—See Arthritis Deformans.

Hysteric Joints.—Gr. ὑστέρα womb. See under Arthritis.

Iliopsoas Bursitis.—L. *il'ium*, haunch-bone; Gr. ψόα loin. See Bursitis.

Infantile Paralysis.—L. *in'fans*, infant; Gr. παρά beside + λύειν to loosen. See Poliomyelitis Acuta, in Part 1.

Scurvy.—See Part 1, General Medicine and Surgery.

Infectious Arthritis.—L. *infec'tio*. See Arthritis; and Still's Disease.

Inferior Maxilla, Dislocations of the.—L., lower jawbone. See Dislocations of the Lower Jaw.

Fractures of the.—See Fractures of the Lower Jaw.

Infracotyloid Dislocations of the Hip.—L. *in'fra*, beneath; Gr. κοτυλοειδής cup-shaped. See Dislocations of the Hip.

Intermittent Hydrarthrosis.—L. *in'ter*, between + *mit'tere*, to send; Gr. ὕδωρ water + ἄρθρον joint. See Arthritis.

Hydrops Articulorum.—L.; Gr. ὕδρωψ dropsy; L. *artic'ulus*, little joint. See Arthritis.

Internal Condyle of the Humerus, Fractures of the.—Gr. κόνδυλος knuckle. See Fractures of the Elbow.

Derangement of the Knee Joint.—See Displacement of a Semilunar Cartilage; Loose Bodies; Lipoma; and Villous Arthritis.

Interphalangeal Joints of the Fingers, Dislocations of the.—L. *in'ter*, between + Gr. φάλαγξ. See Dislocations of the Fingers at the Interphalangeal Joints.

Inversion of the Foot.—L. *in*, in + *ver'sio*, turning. See Talipes Varus.

Ionization.—See Part 1, General Medicine and Surgery.

Jaw, Dislocations of the Lower.—See Dislocations of the Lower Jaw.

Fractures of the Lower.—See Fractures of the Lower Jaw.

Upper.—See Fractures of the Upper Jaw.

Jerk-Finger.—See Trigger-Finger.

Joint Affections.—See Arthritis.

Ankle, Tuberculosis of the.—See Ankle Joint and Tarsal Tuberculosis.

Elbow, Tuberculosis of the.—See Elbow Tuberculosis.

Finger, Stiff.—See Stiff Finger Joints.

Great Toe, Painful.—See Great Toe-Joint, Painful.

Hæmophiliac.—Gr. αἷμα blood + φιλεῖν to love. See under Arthritis.

Hemorrhage within the.—Gr. αἷμα blood + ῥηγνύναι to burst forth. See under Arthritis.

Hip, Tuberculosis of the.—See Hip Tuberculosis.

Hysteric.—Gr. ὑστέρα womb. See under Arthritis.

Inflammation.—L. *inflamma're*, to set on fire. See Arthritis.

Joint, Knee, Derangement, Internal, of the.—See Knee, Internal Derangement of the.

Joint, Knee, Displacement of a Semilunar Cartilage of the.—See Displacement of a Semilunar Cartilage.

Fatty Overgrowth in the.—See Lipoma of Joints and Tendon Sheaths.

Internal Derangement of the.—See Knee, Internal Derangement of the.

Lipoma in the.—See Lipoma of Joints and Tendon Sheaths.

Loose Bodies in the.—See Loose Bodies in the Knee-Joint.

Joint, Knee, Tuberculosis of the.—See Knee Tuberculosis.

Lipoma.—See Lipoma of Joints and Tendon Sheaths.

Mice.—See Loose Bodies in the Knee-Joint.

Neurotic.—Gr. *νεῦρον* nerve. See under Arthritis.

Shoulder, Tuberculosis of the.—See Shoulder Tuberculosis.

Stiff-Finger.—See Stiff Finger Joints.

Wrist, Tuberculosis of the.—See Wrist Tuberculosis.

Knee, Back.—See Genu Recurvatum.

Clicking, in Babies.—See Snapping or Clicking Knee in Babies.

Congenital Flexion of the.—See Congenital Flexion of the Knee.

Crucial Ligament, Rupture.—L. *crux*, cross. See under Displacement of a Semilunar Cartilage.

Derangement, Internal, of the.—See Knee, Internal Derangement of the.

Dislocations of the.—See Dislocations of the Knee.

Knock.—See Knock-Knee.

Lipoma in the.—See Lipoma of Joints and Tendon Sheaths.

Loose Bodies in the.—See Loose Bodies in the Knee-Joint.

Overextension of the.—See Genu Recurvatum.

Snapping or Clicking, in Babies.—See Snapping or Clicking Knee in Babies.

Sprain.—See under Arthritis.

Knee Tuberculosis.—**Synonyms.**—Tumor albus; white swelling.

Diagnostic Features.—A slow, insidious onset; chronicity; pain; tenderness on point pressure; swelling; lameness; reflex muscle spasm, limiting extension; local elevation of temperature; atrophy of the thigh and calf muscles. In the early stage of the disease, the affected limb is commonly longer than the sound one.

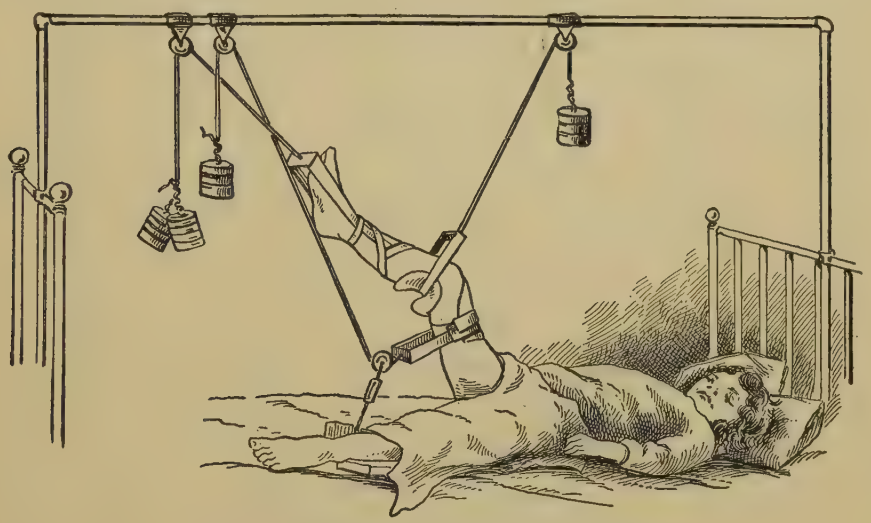


Fig. 139.—Reduction of flexion deformity by traction.

Displacement of a Semilunar Cartilage of the.—See Displacement of a Semilunar Cartilage.

Extension of the.—L. *exten'sio.* See Genu Recurvatum.

Fatty Overgrowth in the.—See Lipoma of Joints and Tendon Sheaths.

Flexion, Congenital, of the.—See Congenital Flexion of the Knee.

Fractures of the.—See Fractures of the Knee.

Housemaid's.—See Bursitis.

Hyperextension of the.—Gr. *ὑπέρ* over + L. *exten'sio.* (See Genu Recurvatum.

Knee, Inflammation of the.—L. *inflammáre*, to set on fire. See Arthritis.

Internal Derangement of the.—See Displacement of a Semilunar Cartilage; Loose Bodies; Lipoma; and Villous Arthritis.

Prognosis.—This is usually good under treatment. It is better than in Pott's or hip-disease. From two to four years of treatment are required.

Treatment.—Good hygiene is of first importance (consult Tuberculosis, Pulmonary, in Part 1).

Flexion deformity should first be overcome, if possible, either by traction and gentle leverage under an anæsthetic, or by traction in the line of deformity, in bed, as shown in Fig. 139, (see under Hip Tuberculosis, for the manner of applying traction), or by fixation of the joint with plaster bandages (*q.v.*) extending from the ankle, or better, the toes, to the groin, or to and including the pelvis, the patient not being confined to bed, except in very acute cases, when recumbency for a few weeks is required. Apply the plaster bandage closely over a long,

white, seamless stocking or flannelette or cotton flannel bandage, with light cotton pads covering the bony prominences of the knee and ankle. Apply the plaster especially thickly just above and just below the knee, "carefully moulding it into the depressions about the patella." Strips of steel or basswood may be incorporated in the cast to strengthen it. Slipping down of the cast may be prevented by applying adhesive strips to the leg and incorporating their upper free ends in the cast. On removing the plaster at the end of one or two weeks, side for the purpose of traction. Shoulder straps are unnecessary if traction is employed. A plaster bandage may be worn beneath the brace if traction is not employed. The brace should be worn day and night. After several months it is replaced by the caliper brace, the lower ends of which are turned in and fastened to the heel of the shoe, but the brace is a half to three-quarters of an inch too long for the patient, so that the latter's heel does not reach the bottom of the shoe, the most of the weight being borne by the ring at the groin.

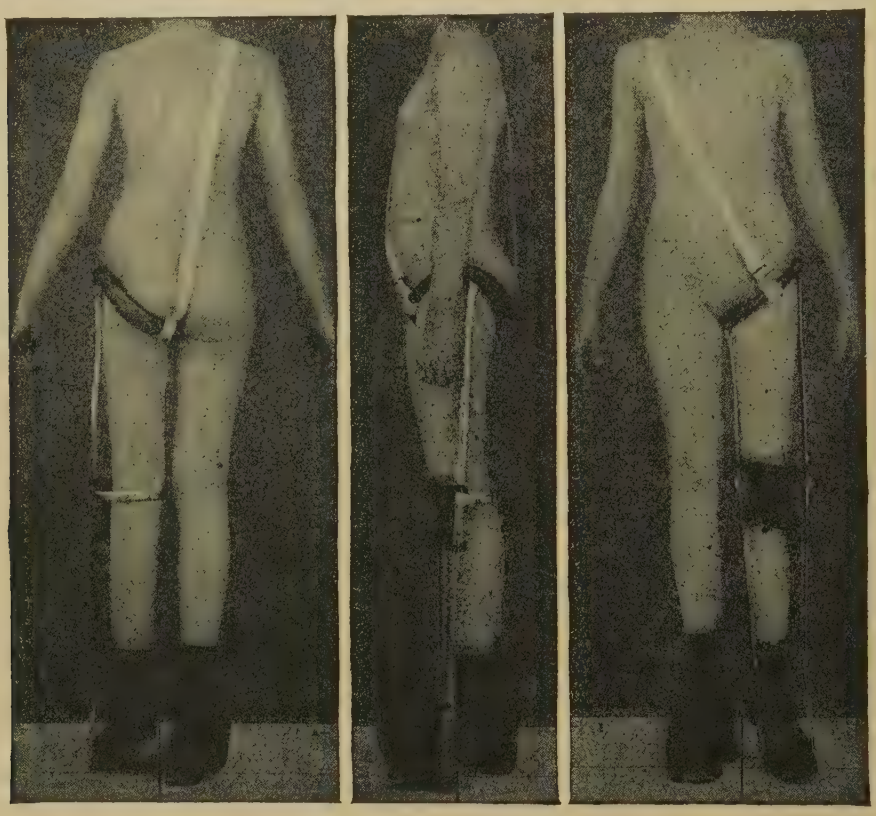


Fig. 140.—Thomas walking knee-splint.

the deformity will be found much more reducible, when another plaster should be applied. Unless the symptoms are acute (*e.g.*, pain, tenderness, muscle spasm, local heat, and evening fever), the patient should be allowed about in the cast on crutches, with a high sole on the sound leg, until joint sensitiveness has passed, when weight bearing is tentatively allowed.

Some replace the plaster, after the acute symptoms have subsided, by the Thomas knee brace (Fig. 140). It is two and one-half or three inches longer than the limb, and straps are attached to the foot-piece on each

After several months, if no symptoms are present, the brace may gradually be dispensed with; but on the first return of muscle spasm, etc., fixation by means of plaster should be resumed. Says Primrose: "As a rule, from one to two years must elapse after the acute symptoms have disappeared before retentive apparatus can be abandoned."

Should the above-described measures fail to correct deformity, owing to the presence of adhesions and contractions, ankylosis, or subluxation of the tibia, anæsthetize the patient and employ Whitman's manœuvre.

With the patient lying prone upon a table, the feet projecting over its end, place enough pillows under the trunk to bring the anterior border of the tibia down upon the table. Then hold the head of the tibia firmly upon the table while an assistant presses downward upon the thigh, avoiding further subluxation. Remove the pillows as the contraction yields. Following reduction, or as much as is attainable without undue force, employ traction within a plaster-cast in bed for a time and then employ a brace. In long standing cases Whitman advises preliminary open division of the flexor (hamstring) tendons, followed by partial correction. Later when repair is complete, the Bradford-Goldthwait genuclast or Peter's wrench may be used; and finally osteotomy, if required. After correction of deformity see that the circulation of the limb is not impaired, since, in the young, the epiphysis of the femur may become separated and press upon the popliteal vessels. In the reduction of extreme deformity by osteotomy, employ two or three sittings, in order to avoid rupturing the large blood-vessels by too sudden stretching. After reduction by osteotomy, put the limb up in plaster-of-Paris, and after two months, allow the patient to walk about, still, however, retaining the plaster for some time.

In children under fifteen years of age, the conservative treatment described should be employed; but in adults it may often be advisable, in order to effect a quick cure, to resort to operative measures. If an extra-articular focus is located by means of a skiagram, and the joint is not yet infected, and the patient is over fifteen years of age, excise the diseased tissue. Pure carbolic acid or the cautery may then be applied to the walls of the cavity, or it may be filled with a mixture of iodoform, sixty parts, spermaceti and oil of sesame, twenty parts each, rendered fluid at 50° C., thoroughly stirred before using (V. Mosetig-Moorhof), and the wound closed. If the joint is involved, erasion or excision may be performed. Erasion is preferable to excision in children because it does not interfere with epiphyseal growth; but excision (resection of the knee-joint followed by bony ankylosis) is better in adults. Gouvain says "Erasion and scraping operations should not be practiced if they can possibly be avoided." When there is much synovial effusion, arthrotomy may be performed and the synovial fringes cut out without scraping. Pure carbolic acid or a strong solution of zinc chloride may then be applied, the wound closed, and a plaster support applied. "In inveterate cases the entire hypertrophied synovial membrane may be removed by an arthrectomy" and the knee splinted for a year or longer (Author ?—).
Amputation is employed only as a last resort to save life.

Adjuvant measures for the relief of pain and infiltration, etc., are the application of the cautery every few days, the X-ray, insolation (see under Hip Tuberculosis), ichthyol ointment, 40 per cent., and Bier's passive hyperæmia. In employing the latter, constrict the limb above the affected joint by several broad turns of a soft rubber bandage just sufficient to restrict the venous return, producing a bluish-red, warm swelling (not white, or cold, or painful). Continue the congestion for from one to four hours or longer, once or twice daily, and gradually lengthen the time each day up to twelve or more hours. If pain is produced, discontinue the treatment.

For the treatment of abscess and sinuses, see under Hip Tuberculosis.

Knock-Knee; Genu Valgum.—L. *geńu*, knee; *val'gum*, shambling, wry. **Causes.**—Congenital anomaly; rickets; adolescence; fracture; epiphyseal injury or disease; tuberculosis of the knee; inactivity, as in the treatment of hip disease; osteomyelitis; anterior poliomyelitis.

Treatment.—In slight cases in young children and in adolescents, press out, for ten or more minutes, several times daily, the extended knee with one hand, while the other hand presses the leg in; and massage the limbs vigorously morning and night. Have the sole on the inner side of the shoes raised one-quarter of an inch, and instruct the patient to walk with the feet parallel. Exercises in which the body is raised upon the toes, such as bicycle and horseback riding, are recommended.

If this treatment is insufficient, employ the Thomas knock-knee brace, not jointed at the knee (Fig. 141) combined with massage, manual correction, and exercises morning and night. From six months to one year of treatment by braces is usually required, says Whitman, whereas in young children the deformity may be "corrected at once by manual force under anæsthesia."

In marked cases after the age of four or five years, osteotomy or osteoclasis (consult the standard textbooks) will probably be required, followed by fixation in plaster for four to eight weeks, and this by massage and exercises, and if deemed advisable, the brace, for several months.

Kyphosis; Hump-Back.—Gr. *κύφωσις* hump-back, from *κῦφος* crookedness. **Causes.**—Round, or stoop, or droop shoulders (*q.v.*, for causes and treatment); adolescence; Pott's disease; syphilis; malignant disease; fracture; aneurysmal erosion; osteitis deformans; spondylitis deformans; secondary osteoarthropathy; acromegaly; scoliosis; osteomalacia: rickets; marasmus; scurvy; cretinism; old age (atrophy of the intervertebral discs); traumatism; tabes.

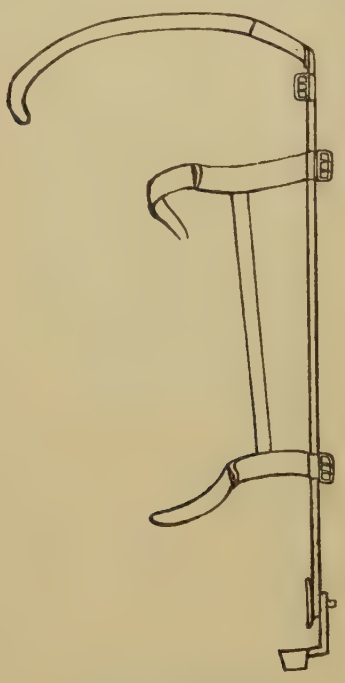


Fig. 141.—Knock-knee brace. (Bradford and Lovett).

Treatment.—This depends, of course, upon the cause. The prognosis in the kyphosis of adolescents is not good. Whitman gives the following directions: "In favorable cases partial rectification of the deformity by force (the Calot operation) is indicated. Afterward support, forcible movements, and corrective exercises should be employed" (see Round Shoulders).

Treat traumatic spondylitis as in Pott's Disease (*q.v.*,) by recumbency and hyperextension of the spine, in very acute cases, followed by a plaster jacket or brace for six months or much longer. Employ massage and graduated exercises during convalescence. It is usually cured in a year or two.

Larynx, Fractures of the.—See Fractures of the Larynx.

Lateral Curvature of the Spine.—See Scoliosis.

Leg, Fractures of the.—See Fractures of the Leg, the Lower End; and Fractures of the Leg, the Shaft.

Legg's Disease.—See Perthes' Disease.

Lipoma Arborescens.—Gr. *λίπος* fat + *-ωμα* tumor; L. *ar'bor*, tree. See Villous Arthritis.

Lipoma of Joints and Tendon Sheaths.—Gr. *λίπος* fat + *-ωμα* tumor. Of the joints, the knee, and of the tendon sheaths, the peroneals and posterior tibial are most frequently involved. The condition is manifested by pain, swelling, and disability, and sometimes crepitation, and, in the knee, a dense swelling on either side of the patella and its tendon.

Treatment.—For general obesity, employ the reduction treatment described under Obesity (in Part 1). Locally employ daily vigorous massage of the tissues about the joint, strapping and compression of the joint, and enjoin the avoidance of stair climbing and walking.

If a faithful trial of the above conservative treatment affords no material relief, remove the hypertrophied masses through a lateral incision close to the inner border of the patella, or through bilateral incisions, and close the wound layer by layer with interrupted catgut sutures, leaving in a silk seton for twenty-four hours for drainage purposes. At the end of a week, remove the stitches and commence gentle passive manipulation. "Three to four weeks should put the joint in a practically normal condition." (Goldthwait, Painter and Osgood.)

Lock-Finger.—See Trigger-Finger.

Long Bones of the Hand and Foot, Tuberculosis of the.—See Tuberculosis of the Long Bones of the Hand and Foot.

Loose Bodies in the Knee Joint; Joint Mice.—**Cause:** Osteochondritis dessicans following injury. The characteristic symptom is recurrent locking or sudden interference with the function of the joint.

Treatment.—If the loose body can be felt, it may possibly be transfixed with a needle, under local anæsthesia (see cocaine or novocaine in Part 11), cut down upon, and removed. Have the patient find the body with sterile gloved hands. The joint must then be immobilized for two or three weeks, followed by passive manipulation. For the removal of inaccessible loose bodies, the patella must be split longitudinally, with the knee flexed, as described under Displacement of a Semilunar Cartilage.

Loose Shoulder.—See Dislocation, Recurrent, of the Shoulder.

Lordosis.—Gr. *λορδοῦν* to bend. Abnormal hollowness of the back.

Causes.—Congenital anomaly; spondylolisthesis; congenital dislocation of the hip; muscular dystrophy; compensatory to dorsal kyphosis (*q.v.*); flexion contraction of the thighs; wearing of high heels; straight front corset; drag of a large abdomen, as in pregnancy, abdominal tumor, etc.; professional contortionism.

Lower Jaw, Dislocations of the.—See Dislocations of the Lower Jaw.

Fractures of the.—See Fractures of the Lower Jaw.

Lumbar Abscess.—L. *lum'bus*, loin; *absces'sus*, a going apart. See Pott's Disease.

Malar Bone, Fractures of the.—L. *ma'la*, cheek. See Fractures of the Malar Bone.

Mallet-Finger; Drop-Finger.—This deformity is due to tearing of the extensor tendon from its insertion into the terminal phalanx.

Treatment.—Fix the finger in extension by means of a palmar splint including the wrist until the tendon has had time to reattach itself; or, first suture the torn tendon to the periosteum and then apply a palmar splint.

Maxilla, Inferior, Dislocations of the.—L. *maxil'la*, jaw-bone. See Dislocations of the Lower Jaw.

Fractures of the.—See Fractures of the Lower Jaw.

Superior, Fractures of the.—See Fractures of the Upper Jaw.

Metacarpal Bones, Fractures of the.—Gr. μετά after + καρπός wrist. See Fractures of the Metacarpal Bones.

Tuberculosis of the.—See Tuberculosis of the Long Bones of the Hand.

Metacarpophalangeal Joints, Dislocations of the.—See Dislocations of the Metacarpophalangeal Joints.

Metatarsal Bones, Fractures of the.—Gr. μετά after + ταρσός tarsus. See Fractures of the Metatarsal Bones.

Tuberculosis of the.—See Tuberculosis of the Long Bones of the Hand and Foot.

Metatarsalgia, Anterior.—See Anterior Metatarsalgia.

Mice, Joint.—See Loose Bodies in the Knee Joint.

Morbus Coxæ Senilis.—L., senile disease of the hip. See Arthritis Deformans, under the Hypertrophic Type.

Morton's Painful Affection of the Foot.—See Anterior Metatarsalgia.

Nasal Bones, Fractures of the.—L. *nas'us*, nose. See Fractures of the Nose.

Neck, Stiff.—See under Torticollis,

Nélaton's Line.—See under Fractures of the Hip.

Nerve Injuries in Fractures.—See General Considerations, under Fractures.

Neuralgia, Morton's.—Gr. νεῦρον nerve + ἄλγος pain. See Anterior Metatarsalgia.

Plantar.—See Plantar Neuralgia.

Neurasthenic Spine.—See Neurotic or Neurasthenic Spine.

Neuropathic Arthritis.—Gr. νεῦρον nerve + πάθος disease. See under Arthritis.

Neurotic Joints.—See under Arthritis.

Neurotic or Neurasthenic Spine.—Gr. νεῦρον nerve + α priv. + σθένος strength; L. *spin'a*, spine or thorn. The neurasthenic back is characterized by an attitude of ligamentous and muscular weakness, local pain and debility, and the presence of sensitive points.

Causes.—Inherent weakness; traumatism (chronic sprain); weak foot; contracted foot; faulty attitude; inequality in the length of the legs; worry; overwork.

Treatment.—Any possible causal influence should be corrected. A light supporting brace or corset is of service. For sprain, a plaster jacket (see under Pott's Disease) should be employed for about six weeks, and then gradually dispensed with. Massage, douches, gymnastic exercises, avoiding fatigue, the thermocautery for pain, good hygiene, nutritious food, and tonics, if indicated, are all of service in appropriate cases (for the treatment of neurasthenia, see Neurasthenia, in Part 1).

Nose, Fractures of the.—See Fractures of the Nose.

Obstetrical Paralysis.—L. *ob*, in front of + *sto*, I stand. See Brachial Plexus Paralysis.

Olecranon, Fractures of the.—Gr. ὠλέκρανον. See Fractures of the Elbow.

Open Fractures.—See General Considerations, under Fractures,.

Os Calcis, Fractures of the.—L. See Fractures of the Tarsal Bones.

Osteitis Deformans.—See Part 1, General Medicine & Surgery.

Osteoarthritis.—Gr. ὀστέον bone + ἄρθρον joint + -ιτις inflammation. See Arthritis Deformans.

Osteoarthropathy, Secondary Hypertrophic.—See Part 1, General Medicine & Surgery.

Osteochondritis.—See Perthes's Disease.

Osteogenesis Imperfecta Fœtalis.—Gr. ὀστέον bone + γεννάω to beget. See Fragilitas Ossium.

Osteomalacia.—See Part 1, General Medicine and Surgery.

Osteomyelitis.—See Part 1, General Medicine and Surgery

Osteopathies, The Hypertrophic.—See Part 1, General Medicine and Surgery.

Osteoporosis Senilis.—Gr. *ὀστέον* bone + *πόρος* passage. See Fragilitas Ossium, in Part 1.

Osteopsathyrosis.—Gr. *ὀστέον* bone + *ψαθυρός* friable. See Fragilitas Ossium, in Part 1.

Overextension of the Knee.—See Genu Recurvatum.

Paget's Disease.—See Osteitis Deformans, in Part 1.

Painful Affection of the Foot, Morton's.—See Anterior Metatarsalgia.

Painful Great Toe-Joint.—**Causes.**—Hallux rigidus; weak foot; pressure of the shoe.

The Treatment is the same as for Hallux Rigidus.

Painful Heel.—**Causes.**—Long standing; weak or flat foot; hollow or contracted foot; achillobursitis; calcaneobursitis; rheumatoid arthritis; gonorrhœa; exostosis; neuroma.

Treatment.—Attend to the cause. A rubber heel may afford relief in mild cases. A metal plate with a concavity beneath the painful area may be worn. Rest, by means of a plaster bandage, is indicated if the condition is inflammatory. A chronically inflamed bursa or spurs (revealed by radiography) should be removed; but spurs should not be removed in arthritis deformans.

Paralysis, Brachial Plexus.—Gr. *παρά* beside + *λύειν* to loosen. See Brachial Plexus Paralysis.

Cerebral, of Childhood.—See Cerebral Paralysis of Children.

Infantile.—See Poliomyelitis Acuta, in Part 1.

Obstetrical.—L. *ob*, in front of + *sto*, I stand. See Brachial Plexus Paralysis.

Complicating Pott's Disease.—See under Pott's Disease.

Spastic Cerebral.—Gr. *σπασμός* spasm. See Cerebral Paralysis of Children.

Spastic Spinal.—The orthopædic treatment is that of Cerebral Paralysis of Children.

Paralytic Dislocations.—See Dislocations, Paralytic.

Patella, Dislocations of the.—L. *patel'la*, pan. See Dislocations of the Patella.

Patella, Fractures of the.—See Fractures of the Patella.

Slipping.—See Slipping Patella.

Pathological Dislocations.—See Dislocations, Pathological or Spontaneous.

Fractures.—See Fragilitas Ossium, in Part 1.

Peliosis Rheumatica.—Gr. *πελιός* livid; *ῥευματικός*. See Purpura, in Part 5, Skin Diseases.)

Pelvis, Fractures of the.—L. *pel'vis*, basin. See Fractures of the Pelvis.

Perthes's Disease; Osteochondritis Deformans Juvenilis.—Gr. *ὀστέον* bone + *χόνδρος* cartilage + *-ιτις* inflammation. A newly discovered disease, affecting principally the upper femoral epiphysis, usually in boys between five and ten years of age, characterized anatomically by a gradual flattening of the femoral head, which sometimes appears crushed, and clinically by a slight limp, restriction of abduction and inward rotation, and slight shortening, but no pain.

The affection is scarcely to be distinguished from tuberculous hip disease, except that it is benign and disappears spontaneously in from two to four years.

Protection by means of a long plaster of Paris fixation splint (see under Hip Tuberculosis) is advised.

Pes Planus.—L., flat-foot. See Weak Foot.

Valgus.—See Weak Foot.

Phalanges of the Fingers, Dislocations of the.—Gr. *φάλαγξ* phalanx. See Dislocations of the Fingers at the Interphalangeal Joints, and Dislocations of the Fingers at the Metacarpophalangeal Joints.

Fractures of the.—See Fractures of the Phalanges of the Fingers.

Toes, Fractures of the.—See Fractures of the Phalanges of the Toes.

Tuberculosis of the.—See Tuberculosis of the Long Bones of the Hand and Foot.

Pigeon-Breast.—See Chicken Breast.

Pigeon-Toe; Hallux Varus.—L. *hal'lux*, great toe; *var'us*, bent inward, *i.e.*, away from the other toes. **Causes.**—Congenital hallux varus; bow-legs; congenital talipes; coxa vara with the femoral necks turned forward; weak foot; weak knees (genu valgum).

Treatment.—Correct the cause. In simple cases, raise the outer border of the sole of the shoe, and train the patient to walk with the feet parallel. In congenital hallux varus correct the deformity with adhesive plaster.

Plantar Flexion of the Foot.—L. *plańta*, sole of the foot; *flex'io*, bending. See Talipes Equinus.

Plantar Neuralgia.—L. *plańta*, sole of the foot; Gr. *νεῦρον* nerve + *ἄλγος* pain. **Causes.**—Hollow or contracted foot; weak or flat foot; influenza; gout or rheumatism; rupture of the plantar fascia.

Treatment.—Attend to the cause. In injury or disease of the plantar fascia, secure

rest by means of a plaster bandage until the pain and sensitiveness have disappeared.

Plaster Bandages, How to Prepare.—Plaster bandages are made by rolling four-yard strips of washed crinoline, stitched together, in dental, or better moulders', plaster-of-Paris. They should be kept in a tin bread-box in a dry place. Before using, if damp, they may be dried in an oven.

Plaster-Casts, How to Make.—After cleansing, drying, and powdering the skin, apply one thickness of sheet-wadding in the form of a roller bandage. Cover bony prominences thickly. Immerse the plaster bandage (see How to Prepare, above) completely, on end in plain warm water, until all bubbles cease to rise, then wring it out, and apply. Never reverse the bandage during the application. Renew the water after the third bandage. Thin cypress wood or tin strips, perforated with holes to catch and hold the plaster, may be incorporated in the plaster to reinforce it. If the plaster is to be split, it should be done as soon as the cast is completed, a strip of tin having been previously placed over the skin under the line to be cut. Use a jack-knife to cut the plaster. The cut edges, after drying, may be covered with adhesive plaster, to prevent crumbling.

To remove plaster from the hands, wash them in sugar water.

Pneumococcus Arthritis.—Gr. *πνεύμων* lung + *κόκκος* berry. See under Arthritis.

Poliomyelitis Acuta.—See Part 1, General Medicine and Surgery.

Popliteal Bursitis.—L., from *pop'les*, the ham. See Bursitis.

Post-Mediastinal Abscess.—L. *post-* after; *mediastĭnum*, median partition. See Pott's Disease.

Pott's Disease.—**Synonyms.**—Spondylitis tuberculosa; tuberculosis of the spine.

Diagnostic features are (1) stiffness of the spine, due to muscle spasm, made manifest when the patient sits down, rises, picks an object from the floor, and walks (psoas contraction limits extension of the thigh; in hip-disease motion is limited in all directions, not in extension merely); (2) a posterior angular projection, or kyphosis (*q.v.*); (3) torticollis in cervical disease; (4) abnormally square shoulders in middorsal disease; (5) lordosis and over-erectness in lumbar disease (see also Lordosis); (6) "peculiar intoeing step" in dorsal and lumbar disease; (7) weakness and disinclination to walk; (8) paroxysmal pain, causing "night-cry" in children (occipital and auricular, sometimes earache, in cervical disease; thoracic and abdominal, stomach-ache, in dorsal and dorso-lumbar disease; inguinal and thigh pains, sciatica, etc., in lumbar disease; painful cramp is common); (9) grunting respiration, cough, and dyspnœa, sometimes resembling asthmatic attacks, in cervical and upper dorsal disease.

Abscess (retropharyngeal, post-mediastinal, dorsal, lumbar, psoas, buttock) or paralysis may occur.

Prognosis.—This is good under treatment, three or four years of which are usually required. The outlook in paralysis is also usually favorable.

Treatment.—A correct hygienic regimen is of first importance (consult Tuberculosis, Pulmonary, in Part 1).

Local treatment aims at spinal immobilization and lessening of the superincumbent weight at the seat of disease by splinting the spine in an extended position.

In very acute cases, in the presence of abscess, threatened or actual paralysis, intractable pain, progressive deformity, marked scoliosis, psoas contraction, in the rare atlo-axoid cases, in young children up to four years of age, and in cases which do not progress satisfactorily under ambulatory treatment the treatment should be by recumbency or horizontal fixation.

It is essential to have a firm mattress upon a stiff woven-wire spring, and between the mattress and the spring a foot-wide planed board or table leaf, placed lengthwise. Upon the mattress is placed a rectangular, gaspipe frame, covered with cloth (Whitman's convex stretcher frame). The frame should be from four to twelve inches longer than the patient and about four-fifths as wide, the long side bars lying opposite the articular surfaces of the four extremities with the trunk, so that the shoulders and arms rest on the bed outside the frame. Bandages may be wound tightly around that portion of the frame opposite the trunk, so as "to make the support as unyielding as possible." The frame is then covered with strong canvas or heavy cotton cloth, laced tightly down the back with corset lacing, leaving a space at the buttocks for the evacuation of the bowels. On each side of the kyphus or seat of disease are sewed folded sheets or felt pads, about six or seven inches long, three or four inches wide, and one inch thick, or thick enough to press the deformity slightly upward. The patient is fastened to the frame by means of straps crossing the chest like those of a knapsack, or a waist pinned above the shoulders and at the sides or

back, and by a sheet bound around the pelvis. A rubber cloth should be placed under the buttocks. Once a day, the patient should be turned on his side and the back bathed with alcohol and dusted with powder. Diapers should be slipped under the pelvis instead of lifting the pelvis by raising the feet. The patient should lie constantly upon the frame, never even partially sitting up, until the acute symptoms have subsided, that is, until there is no longer pain, fever, night starts, or stiffness. This takes from four to six months, or in the presence of abscess or paralysis, from six to eighteen months. In young children, recumbency should be continued, even after the subsidence of acute symptoms, until the age of two and a half to four years. The child's clothing should be made to include the frame.

The frame is bent so that the convexity is opposite the kyphus, in order to hyperextend the spine, and this bowing should be gradually increased. In cervical disease it should be quite marked, and in these cases, too, head traction of one or more pounds should be employed by means of a pulley and the Glisson chin and occiput sling, and raising of the top of the bed. In occipito axoid involvement the head should also be fixed by means of lateral sandbags or a metal brace. In paralysis traction may also be exerted upon the legs. In psoas contraction employ traction upon the leg in the line of deformity, and gradually lower the leg as irritation and muscle spasm subside (see Buck's Extension).

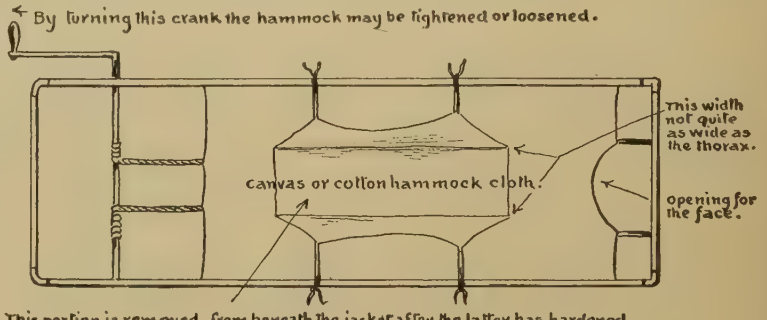

By turning this crank the hammock may be tightened or loosened.
This width not quite as wide as the thorax.
canvas or cotton hammock cloth.
opening for the face.
This portion is removed from beneath the jacket after the latter has hardened.

Fig. 142.—Bradford and Lovett hammock frame.

Following treatment by recumbency, ambulatory supports (plaster-jacket, or steel brace,) are employed.

In acute cases other than those mentioned as requiring bed treatment, employ the plaster-of-Paris jacket. It may be applied with the patient face downward on the Bradford and Lovett hammock frame (Fig. 142).

Next to the skin is worn a close-fitting, seamless stockinette or shirting reaching to the knees, beneath which are placed lengthwise two strips of bandage, one in front and one in back, with ends tied together, to be used as "scratchers." They may be wet with alcohol and used to bathe the skin, and may be renewed when soiled. The kyphus and all bony prominences should be padded, and felt pads, at least an inch in thickness, should be placed at the sides of the kyphus. A folded towel may or may not be placed over the abdomen, to furnish room, when removed from beneath the cast, for the distention of the abdomen after meals (dinner pad). The plaster bandages (*q.v.*) are then applied, beginning from below. The cast should reach from the pubes to the sternal notch in front, and from the cleft of the buttocks to the midscapular region behind, leaving no part of the abdomen exposed below the cast, in order to avoid hernia (C. L. Starr). Remember that "the pelvis is the base of support for all forms of splints." First, beginning as low down as practicable, apply the bandages up to the level of the apex of the kyphus. Then after the plaster has hardened, loosen the hammock and produce hyperextension "to the point of slight discomfort." Then complete the jacket. The latter should be uniformly $\frac{3}{16}$ to $\frac{1}{4}$ inch thick.

If the disease involves the upper dorsal region, the jacket is best applied (C. L. Starr) with the patient lying on his back upon the Goldthwait, Metzger-Goldthwait, or R. T. Taylor apparatus. In using Goldthwait's portable frame, place the patient on the two steel bars, with the latter reaching only to the apex of the kyphus. Then apply the plaster bandages up to this point. Then allow "the upper portion of the trunk to sink downward to the point of toleration," and complete the jacket. Then withdraw the steel bars. The Metzger-Goldthwait apparatus "permits longitudinal traction as well as direct leverage." Starr's forked support may be used. It may be adjusted to the desired height for proper hyperextension, and supports two small steel plates padded with piano felt, which are incorporated in the plaster, the small opening left over them being filled with plaster cream.

Include the shoulders and the neck (a

band of felt being placed about the neck over a high-neck shirt) if the fourth, fifth, or sixth dorsal vertebra is involved. In high dorsal and in cervical disease, the head should also be included, the plaster supporting the occiput and forehead, and leaving the top of the head, the ears, and face exposed (Minerva head-piece).

Says H. L. Taylor: "If the disease is above the tenth dorsal the leverage should be increased by a head or chin support, whether a jacket or brace is employed."

The method of applying plaster-jackets with vertical suspension of the patient by means of a Sayre head-piece is not as efficient, says R. W. Lovett, as the above described methods, by which it has been largely replaced; but Whitman says: "For the routine application of the plaster-jacket, vertical suspension is to be preferred." In employing suspension, use traction "only to the point of comfort." Extend the jacket as high and as low as possible. Keep the patient in a recumbent position for one-half hour or longer after the jacket has been applied.

Fig. 143.—Thomas collar.

"Jackets should be renewed as infrequently as possible, being left on six months or a year when they are efficient and comfortable." (Lovett.)

The treatment by braces, some claim, is the most efficient of all methods, but requires expert knowledge. Whitman, however, says: "The absolute control of the treatment, assured by the use of the plaster-jacket, will often overbalance the claims of the brace." The C. F. Taylor and the Dolfinger braces are the best (Lovett), with head supports in disease above the middle dorsal region. The Thomas collar (Fig. 143) may be employed in disease of the upper cervical region. It is made of mill-board or oakum shaped from a paper pattern. The mill-board is wet and moulded, then dried and covered with cotton wound tightly with a gauze bandage. The brace should be worn day and night. Once a day it should be removed, with the patient lying upon his face or side, and the back bathed and rubbed with alcohol, dried, and dusted with powder. It should be readjusted at intervals.

During convalescence, employ a brace; or the plaster-jacket split down the front (before it is dry, see Plaster-Casts) and laced; or a corset of leather or aluminum, made on a cast obtained by filling the greased plaster jacket with plaster-of-Paris and removing the jacket after the cast has hardened. The leather corset is made of light sole leather previously softened by soaking in water for twenty-four hours, then stretched and tacked to the mould, allowed to dry, trimmed, holes punched in it to make it porous, and hooks fastened along the front to lace it. Its stiffness may be increased by two or three coats of shellac.

A spinal support should be worn for at least a year (in abscess or paraplegia probably three years) after all muscle spasm and pain have disappeared. Test for muscle spasm by elevating the feet so as to hyperextend the back, the patient lying prone. "The disease is rarely cured in two years" (H. L. Taylor). Three or four or more years of treatment are usually required. Discontinue the support gradually, at first only at night, then for gradually increasing periods during the day. Always reapply the support with the patient in the hyperextended position. The kyphosis may increase, even after the disease is cured, from static conditions.

The Albee treatment of dorsal and lumbar caries is as follows: The exact site of the disease having been ascertained by means of the X-rays, the spinous processes are exposed by a semicircular incision extending well above and below the lesion. The spinous processes extending two vertebræ above and two below the lesion are then split, and a strip of the patient's tibia (avoiding the crest; beveling clear through to the marrow) inserted between the split processes, and held in place with kangaroo tendon. The strip of tibia is cut out with a specially designed motor saw. The patient is kept recumbent for three months (children one year), and then allowed up with a supporting jacket or brace until all signs of active disease have disappeared.

This method of treatment is attended by many dangers, *e.g.*, shock, pneumonitis, meningitis, paraplegia, abscess, miliary tuberculosis, etc., and its results are probably not so good, as a rule, in children, as those from the older method of treatment. The bone graft often fractures. Theoretically the treatment seems ideal, but it has not, as yet, proven so in practice, excepting, perhaps, in adults. Hibb's method is preferred by some, especially for children.

Treatment of Abscess.—Abscess cases should be treated by recumbency, in the hope that the abscess may become absorbed. If it

continues to enlarge, however, incise it freely in two or more places, under the strictest asepsis, through the thickest portion of intervening tissue and skin (avoid incising through thin skin), and "opposite the least dependent point," to obviate drainage. Then dissect or curette out the walls of the abscess cavity and all diseased tissue with a flushing curette, wipe dry with iodoform gauze on a clamp, sew the wound up tight with deep absorbable sutures, leaving no dead spaces, and apply a firm, dry dressing. The injection of iodoform emulsion (10 per cent. in glycerine or oil, 10 c.c. every two weeks, or less often, following aspiration) is not generally recommended. One should aim to prevent pyogenic infection of the abscess.

If infection with pus organisms has occurred, provide drainage by means of rubber tubes.

A retropharyngeal abscess should be opened as soon as discovered, because of the dangerous possibilities. If serious dyspnœa is present, open the abscess through the mouth, with the head low (without anæsthesia). Holt opens the abscess with the finger nail sharpened to a point. In non-urgent cases make the incision along the posterior border of the upper third of the sternocleido-mastoid muscle, and carry the dissection behind the large vessels of the neck and in front of the prevertebral muscles until the abscess is reached. The external incision is to be preferred because of the resulting sinus, which may persist for many months.

Severe and frequent attacks of inspiratory dyspnœa indicate the pressure of an abscess in the upper thoracic region upon the trachea or bronchi. Costotransversectomy is here indicated. One or two articulations between rib and transverse process are resected, and the finger is inserted until the abscess is reached, which is usually in front of the fifth dorsal vertebra. A drainage tube is inserted. (Whitman).

Treatment of Sinuses.—Sinuses, as well as abscess cavities, unless serving as drains, are best excised or thoroughly curetted; or they may be injected with Morrison's paste (*q.v.* in Part 11), or Beck's bismuth paste (Part 11), after drying with gauze. The paste liquefied by heat, is injected until it escapes from one or more sinuses; these are then closed, and the injection continued until the patient complains of some pressure. The injections are made every five or six days through a dry, sterile glass syringe until the discharge ceases or becomes sterile. The paste is not to be used when the X-rays show a sequestrum; and it should be used with caution in large pus sacs which may become filled with residuary bismuth, for fear of poisoning. It acts best in old sinuses with little discharge.

In sinuses that serve as drains, introduce a rubber tube or catheter with side windows. Bier's suction cups may be applied for three to five minutes at three to five minute intervals for a half hour each day. Balsam of Peru, 10 per cent. in castor oil, is recommended for ulcers. The X-rays and direct sunlight may be beneficial. Rollier's method of heliotherapy "consists in beginning above at the neck, with the head shielded, and below at the feet, exposing from two to four inches of the body surface for five minutes twice daily, increasing time and surface at this rate until the entire body is exposed. Time and insolation are then increased according to the tolerance of the individual. Some do better with eight to ten hours under the direct rays, others can stand only three or four hours." In sinus cases, the discharge is markedly increased during the first week or more of insolation, but then declines with ultimate closure of the sinus.

Treatment of Paralysis.—For threatened or actual paralysis, employ horizontal fixation, as described in the beginning, combined with traction upon both lower extremities (see Buck's extension), and countertraction upon the head by means of a chin and occiput sling attached to a weight over a pulley. A plaster jacket may also be worn for several weeks. If an abscess is demonstrable by radiography, perform costotransversectomy, as previously described. Laminectomy may be resorted to only when conservative treatment is obviously inefficient.

Operations upon the diseased vertebræ are very rarely justifiable, as for the purpose of opening growing, deep-seated abscesses, removing a sequestrum, or securing necessary drainage so as to avert sepsis; and then care should be taken not to expose sound bone. (Whitman.)

Pott's Fracture.—See Fractures of the Leg, the Lower End.

Prepatellar Bursitis.—L. *præ-* before + *patel'la*, pan. See Bursitis.

Pretibial Bursitis.—See Bursitis.

Pretubercular Bursitis.—L. *præ-* before + *tuber'culum*, nodule. See Bursitis.

Psoas Abscess.—Gr. ψόα loin. See Pott's Disease.

Pulmonary Arthropathy.—L. *pul'mo*, lung. See Osteoarthropathy, Secondary Hypertrophic, in Part 1.

Purulent Arthritis.—L. *pus, pu'ris,* pus. See Arthritis.

Rachitis.—See Rickets, in Part 1.

Radial Bursitis.—L. *ra'dius,* spoke; *bur'sa,* sac. See Tenosynovitis.

Radio-carpal Joint, Dislocations of the.—L. *rad'ius,* spoke; *car'pus,* wrist. See Dislocations of the Wrist.

Radio-ulnar Joint, Dislocations of the.—See Dislocations of the Wrist.

Radius, Dislocations of the, at the Elbow. See Dislocations of the Elbow.

Fractures of the.—See Fractures of the Elbow; Fractures of the Forearm, the Shaft; and Fractures of the Radius, the Lower End.

Separation of the Lower Epiphysis of the.—See Fractures of the Radius, the Lower End.

Recurrent Dislocation of the Shoulder.—L. *recur'rens,* returning. See Dislocation, Recurrent, of the Shoulder.

Relaxation of the Sacro-iliac Joint.—See under Sacro-iliac Strain.

Retrocalcaneal Bursitis.—L. *re'tro-* behind + *calcaneum,* heel-bone. See Achillobursitis.

Retropharyngeal Abscess.—L. *rétro-* behind; Gr. *φάρυγξ* pharynx. See under Pott's Disease.

Rheumatic Gout.—Gr. *ῥεῦμα* flux. See Arthritis Deformans.

Torticollis.—See Torticollis.

Rheumatism, Chronic Articular.—See Arthritis Deformans.

Rheumatoid Arthritis.—Gr. *ῥεῦμα flux* + *εἶδος form.* See Arthritis Deformans.

Ribs, Dislocations of the.—See Dislocations of the Ribs.

Fractures of the.—See Fractures of the Ribs.

Rickets.—See Rickets, in Part 1.

Rigid Flat-Foot.—See Weak Foot.

Great Toe.—See Hallux Rigidus.

Spine.—See Spondylitis Deformans.

Weak Foot.—See Weak Foot.

Round Back.—See Kyphosis.

Round, or Stoop, or Droop-Shoulders.—**Causes.**—Faulty posture and certain occupations, as those of the cobbler, tailor, blacksmith, carpenter, boxer, gymnast; improper school furniture; suspension of the clothing from the tips of the shoulders; clothing which prevents free expansion of the chest and free movement of the arms; overwork; nearsightedness; nasal obstruction; bronchitis, emphysema, and heart disease; weak foot; bad hygiene causing muscular weakness and relaxation; paralysis of the muscles of the back, as in acute poliomyelitis (see Scoliosis). Consult also kyphosis.

Brachial neuralgia and even writer's cramp may result. See under Bursitis.

The prognosis under treatment is good.

Treatment.—Instruct the patient in the "setting up drill" employed in the Army, with particular attention upon bringing and keeping the shoulder blades together. The brace may be of temporary service; but, says Lovett, "supporting braces should be avoided, if possible." The clothing should not be suspended from the tips of the shoulders, but from the upper part of the shoulders by cutting it high in the neck. The observance of correct hygiene is, of course, essential, *e.g.*, adequate rest and exercise, fresh air day and night, a daily morning warm bath before breakfast, in a comfortable room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, simple, nutritious food, rest before and after meals, regulation of the bowels, and the avoidance of such poisons as alcohol, tea, coffee, and tobacco.

Sometimes "bowed or flexed scapula," manifested by pain and a rubbing sensation on moving the scapula, may result, and may interfere with the correction of the shoulder droop. In such cases, exercises and the brace should be employed for four or five months. If no relief is thereby obtained, perform Goldthwaite's operation: Through a three-inch incision just above and parallel with the spine of the scapula (curved downward, however, in women), the attachment of the trapezius to the inner portion of the spine of the scapula is exposed by dissection. This is incised for about two inches, exposing the supraspinatus muscle, which is scraped back from the scapula until the bowed portion to be removed is exposed. Other muscular attachments (levator anguli scapulæ and rhomboid minor) are separated with the periosteal elevator without dividing them. The bowed portion of the bone is then removed with bone forceps. The tendon of the trapezius is sutured, and the wound closed. The patient is kept in bed for three or four days, is allowed to walk in about a week, and is well in about another week. Exercises are then resumed.

Rupture of a Crucial Ligament of the Knee.—See under Displacement of a Semilunar Cartilage.

Sacro-iliac Affections.—L. *sac'rum,* sacred; *il'ium,* haunch-bone. Arthritis Deformans or Osteoarthritis.

Arthritis, Infectious.

Displacement.

Osteomyelitis.

Relaxation.
Strain.
Tuberculosis.
Tumors.

Sacro-iliac Arthritis Deformans.—See Arthritis Deformans.

Infectious.—See Arthritis.

Disease.—See Sacro-iliac Tuberculosis.

Displacement.—See under Sacro-iliac Strain.

Osteoarthritis.—See Arthritis Deformans.

Osteomyelitis.—See Osteomyelitis, in Part 1.

Relaxation.—See Sacro-iliac Strain.

Sacro-iliac Strain and Relaxation.—Sacro-iliac strain and relaxation is manifested by local (unilateral or bilateral) and referred pain and local tenderness. The pain may be referred to the legs and feet (sciatica; growing pains) as a result of pressure upon the sacral plexus. It is almost always worse at night.

Etiology.—Fall, blow; twist; heavy lifting; long stooping, standing, lying, or sitting; a heavy, pendulous abdomen; scoliosis; hip disease or ankylosis; high heels; weak foot; hollow back; overstraight back; pregnancy; menstruation; chronic utero-ovarian disease; neurasthenia.

Treatment.—In moderate cases, without displacement of the bones, apply (1) a snug, broad leather belt above the trochanters; or (2) a wide band of adhesive plaster around the pelvis, including the lumbar spine and the buttock, and extending in front beyond the anterior spines, with a felt pad over the sacrum; or (3) a long plaster or stiffened leather jacket (see Pott's Disease), well down over the trochanters. At night a firm hair pillow may be placed under the hollow of the back or side and under the knees. If adhesive strapping is employed, it should be renewed every six or seven days for three or four weeks, and then a corset belt used.

If subluxation exists, it should be corrected before immobilization is employed. This may be accomplished (1) by swinging the patient prone by the shoulders and thighs between two tables; or (2) by manual manipulation, under anæsthesia if necessary, first flexing the thigh with the leg extended, if the sacrum is displaced backward, or if displaced forward extending the thigh. After replacement is accomplished, apply a plaster jacket, "well down over the buttocks and the anterior part of the thigh, and well up the thorax," and keep the patient in bed for three or four weeks. Then employ a removable stiffened leather or plaster jacket, or other form of support, for two or three months, with massage and exercises.

Arthrodesis (artificial ankylosis) may be resorted to in intractable cases. (Chiefly from Goldthwait, Painter, and Osgood.)

Sacro-iliac Subluxation.—L. *sub-* under + *luxa'tio*, dislocation. (See under Sacro-iliac Strain, above.)

Sacro-iliac Tuberculosis.—The diagnostic features are pain, swelling, tenderness on pressing the ilia together, a limping gait, and lateral curvature of the spine, with the inclination away from the diseased joint. An X-ray examination should be made.

The Prognosis is serious.

Treatment.—In very acute cases, put the patient to bed, and employ traction upon the limb of the affected side, as described under Hip Tuberculosis, or employ a double Thomas hip splint (*q.v.*); or apply a double plaster spica (*q.v.*) from the middle of the calf muscles to the mammary line.

After the acute symptoms have subsided, apply a plaster spica, down to the knee, with compression upon the sides of the ilia below the spines, and get the patient out of bed. A tight belt about the pelvis underneath the jacket may be of additional benefit. In place of the plaster jacket one may employ a removable leather jacket (see under Pott's Disease).

Good hygiene is, of course, of prime importance (consult Tuberculosis, Pulmonary, in Part 1).

For the treatment of abscess, consult Pott's Disease or Hip-Disease. If the abscess becomes infected with pus organisms, expose the articulation, and remove, if possible, all diseased bone.

Scaphoid Bone, Fractures of the.—Gr. *σκάφη* skiff + *εἶδος* form. See Fractures of the Carpal Bones.

Scapula, Bowed or Flexed.—L., shoulder-blade. See under Round Shoulders.

Congenital Elevation of the.—See Congenital Elevation of the Scapula.

Elevation of the, Congenital.—See Congenital Elevation of the Scapula,

Flexed or Bowed.—See under Round Shoulders.

Fractures of the.—See Fractures of the Scapula.

Schönlein's Disease.—See Purpura, in Part 5.

Scoliosis; Lateral Curvature of the Spine.—Gr. *σκολίωσις* curvation. Lateral curvature is either functional (postural; early stage; susceptible of correction) or organic (structural; late stage; difficult or impossible to cure).

Sometimes pain, usually lumbar, is complained of. In extreme cases, dyspnœa, cyanosis, and rapid heart action, etc., may result.

Etiology.—Congenital anomaly; rickets; an habitual one-sided posture, caused by improper seats, occupations and recreations, general muscular debility, tilting of the pelvis, as in inequality in the length of the limbs, pelvic asymmetry (pelvic obliquity), torticollis, unequal vision or hearing on the two sides; paralysis of the muscles of the back, as in anterior poliomyelitis, cerebral paralysis, neuritis, syringomyelia, Friedreich's heredo-ataxia, traumatic paralysis, and hysteria; osteomalacia; osteomyelitis; arthritis deformans; spinal tuberculosis; acromegaly; osteitis deformans; chronic sciatic and lumbar neuritis; injury and fracture of the spine; sacro-iliac disease; nasal and respiratory obstruction; heart disease; empyæma followed by cicatricial contraction.

Treatment.—A. The Functional Type.—An invigorating regimen is important, embracing open air exercise, an abundance of nutritious food, a daily morning tepid bath, before breakfast, in a comfortable room, followed by a cold spinal douche and brisk rubdown with a coarse towel, regular hours of eating and sleeping, rest before and after meals, the avoidance of overwork, support of the clothing from the waist instead of from the shoulders, proper lighting, ventilation, seats, and sufficient recesses in school.

Employ twice daily, to the point of fatigue (one to three hours daily at intervals) the setting up exercises employed in the Army. particularly forward and backward and side to side bending, and circumduction or lateral twisting of the trunk, for the purpose of reversing the habitual posture; and employ, also, the "Hoffa self-correction" by side pressure. In exercising, the military attitude should be assumed: head erect, chin depressed, shoulders thrown back, chest expanded, and abdomen retracted. Exercise no earlier than two hours after meals; and do not exercise during menstruation. Light dumbbells may be used, if desired.

These exercises should be continued for months. Their purpose is to correct the deformity by the cultivation of correct postural habits, and to strengthen the back muscles so that the corrected posture may be maintained.

Braces or corsets are not as a rule required.

Round shoulders (*q.v.*) should be treated. If one leg is shorter than the other, it should be raised by means of a high sole.

In functional cases of scoliosis, marked improvement or cure should be noted in from three to six months.

B. The Structural Type.—First correct the deformity as far as possible by vigorous gymnastic exercises to the point of fatigue (one to three hours daily at intervals), including the raising of heavy bars or dumbbells over the head, combined with such measures as lateral suspension and side pressure. The exercises should be adapted to each individual case, and should be supervised at first by the physician.

To keep the gain made by the exercises, etc., a supporting corset or jacket should be worn. It is made from a mould obtained by filling a plaster-of-Paris jacket, the latter having been applied to the patient suspended by a Sayre head-piece (see under Pott's Disease for the technique). The mould is shaved on the prominent, convex side, and built up with plaster on the concave side until it is symmetrical, or perhaps overcorrected. From this mold is made a removable plaster or leather corset (see Pott's Disease) laced in front. The corset may have to be renewed or altered every few weeks or months, the gymnastics, of course, being continued.

Supporting jackets or braces are of value to relieve discomfort in incurable cases.

In anterior poliomyelitis, employ a corset, to hold the spine erect, and a cork sole under the short leg.

Albee's or Hibb's operation is recommended for paralytic scoliosis following correction of the deformity as far as possible.

For the treatment of empyema cases, see Empyema, under Pleurisy, in Part 1.

Scurvy, Infantile.—See Part 1.

Semilunar Cartilage, Displacement of a.—See Displacement of a Semilunar Cartilage.

Senile Coxitis.—L. *senil'is*, senile; *cox'a*, hip. See Arthritis Deformans.

Osteoporosis.—Gr. ὀστέον bone + πόρος passage. See Fragilitas Ossium, in Part 1.

Separation of the Epiphysis of the Femur, the Lower End.—See Fractures of the Femoral Shaft.

Upper End.—See Fractures of the Femoral Neck.

Humerus, the Lower End.—See Fractures of the Elbow.

Upper End.—See Fractures of the Humerus.

Radius, the Lower End.—See Fractures of the Radius, the Lower End.

Shoulder Bursitis.—See Bursitis.

Dislocation, Congenital, of the.—Consult Whitman's *Orthopædic Surgery*.

Shoulder, Dislocation, Recurrent, of the.—See Dislocation, Recurrent, of the Shoulder.

Traumatic, of the.—See Dislocations of the Shoulder.

Droop.—See Round, or Stoop, or Droop-Shoulders.

Fractures of the.—See Fractures of the Shoulder.

Loose.—See Dislocation, Recurrent, of the Shoulder.

Round.—See Round Shoulders.

Stoop.—See Round, or Stoop, or Droop-Shoulders.

Shoulder Tuberculosis.—The diagnostic features are pain, tenderness, often local heat and swelling, stiffness and limitation of motion due to muscle spasm, muscular atrophy, and chronicity. The disease is rare.

Treatment.—Apply a plaster-of-Paris spica, with the limb slightly abducted by means of axillary pads, and midway between extreme inward and extreme outward rotation (see Fractures of the Humerus), and attach the wrist by a sling to the neck beneath all the clothing, to ensure continuous rest.

After three or four months, remove the plaster and carry the arm in a sling for three or four months longer.

If a skiagram reveals localized disease not involving the joint, operative eradication of the diseased tissue may be advisable, followed by swabbing with tincture of iodine, and closure. A subsequent sinus should be treated with dry gauze, without irrigation, until it closes.

If the disease continues to progress in spite of fixation (say, for six months), excise the joint; but in children attempt to save, if feasible, the epiphyseal cartilage. Amputation is to be considered only in very destructive cases, to save life.

For the treatment of abscess, see under Hip-Disease, or Pott's Disease.

If, in healing, ankylosis occurs, the joint may be later excised in order to restore motion.

Sinuses.—L. *sĭnus*, cavity. See under Hip-Disease, Pott's Disease, and Shoulder Tuberculosis.

Skull, Fractures of the.—See Fractures of the Skull. in Part 1.

Slipping Patella.—L. *patel'la*, pan. **Causes.**—Knock-knee; hereditary hypermobility; weakness or atonicity of the quadriceps extensor muscle and ligament; imperfect development of the patella; imperfect development of the external condyle; trauma. (Whitman.)

Treatment.—In traumatic cases, immobilize the knee-joint for about six weeks by means of a plaster bandage (*q. v.*) extending from the groin to the ankle; and later strap the joint and allow the patient up, or employ a knee-cap.

In other cases, employ massage of the quadriceps extensor muscle and a light brace which prevents lateral motion and restricts flexion. Correct knock-knee (*q.v.*)

Operate in intractable cases. (After Whitman.)

Snapping Finger.—See Trigger-Finger.

Snapping or Clicking Knee in Babies.—This may be due to congenital laxity of the ligaments. Bandaging, strapping, or splinting usually corrects the condition. (H. L. Taylor.)

Spasmodic Torticollis.—Gr. σπασμός spasm. See Torticollis.

Spastic Cerebral Paralysis.—See Cerebral Paralysis of Children.

Spinal Paralysis.—The orthopædic treatment is that of Cerebral Paralysis of Children (*q.v.*).

Spine, Arthritis Deformans of the.—L. *spĭna*, spine. See Spondylitis Deformans.

Curvature, Anterior, of the.—See Lordosis.

Dorsal, of the.—See Kyphosis.

Lateral, of the.—See Scoliosis.

Dislocations of the.—See Dislocations of the Spine.

Fractures of the.—See Fractures of the Spine.

Neurasthenic or Neurotic.—See Neurotic or Neurasthenic Spine.

Paralysis, Spastic.—The orthopædic treatment is that of Cerebral Paralysis of Children (*q.v.*).

Rachitic.—See Rickets in Part 1.

Rigid.—See Spondylitis Deformans.

Tibia, Fracture of the.—See under Displacement of a Semilunar Cartilage,

Tuberculosis of the.—See Pott's Disease.

Typhoid.—See Typhoid Spine.

Splay Foot.—See Weak Foot.

Spondylitis Deformans.—Gr. σπόνδυλος vertebra + -ιτις inflammation; L. *defor'mans*, deforming. **Synonyms.**—Spinal hypertrophic arthritis deformans; rigid spine.

The disease is ushered in by soreness and stiffness of the back, and eventually a rounded, rigid kyphosis appears. Referred pains and even paralyses, from nerve root pressure, may occur.

The causes are those of arthritis deformans (*q.v*). Traumatism is a possible cause. Gonorrhœa is apparently the commonest cause.

Arrest of the disease is possible in early cases.

Treatment.—In the progressive stage of the disease, fix the spine with a light plaster-of-Paris jacket (see Pott's Disease), extending from the level of the trochanters to the axillæ, applied with the patient standing. It produces marked improvement in the symptoms in a few days. It should be worn until all pain has disappeared, and then replaced by a light brace or corset (*q.v.* under Pott's Disease). Rubber heels may be worn to lessen jar. Massage and hot baths are beneficial. The Paquelin cautery is useful for the relief of pain. "Self-suspension at intervals may relieve the dragging sensation in the muscles." (Whitman.)

Employ no gymnastics or passive movements of the spine, and warn against lifting or any exertion that may strain the back. Flat foot, if present, should be corrected. Attend to the general health as directed under Arthritis Deformans.

Spondylitis Traumatica.—Gr. *τραῦμα* wound. See under Kyphosis.

Tuberculosa.—See Pott's Disease.

Spondylolisthesis.—Gr. *σπόνδυλος* vertebra + *ὀλισθάνειν* to slip. Forward subluxation of the body of a lumbar vertebra, usually the fifth, causing a peculiar gait, marked lumbar lordosis, shortening of the trunk, and lumbar pain and weakness. A prominence may be detected by vaginal examination. An X-ray examination should be made. The condition is rare.

Causes.—Congenital anomaly; overstrain or other form of injury; disease of the lumbosacral articulation.

Treatment.—If local pain is complained of, a plaster-of-Paris corset may be applied with the patient suspended by a Sayre headpiece (see under Pott's Disease). Whitman recommends a "strong corset or back brace of the Knight or Taylor type." An Albee splint from the third lumbar to the third sacral vertebra is lately recommended.

Spontaneous Dislocations.—L. *sponta-ńeus*, voluntary. See Dislocations, Pathological or Spontaneous.

Fracture.—See Fragilitas Ossium, in Part 1.

Sprained Ankle.—See Ankle Sprain.

Knee.—See Traumatic Synovitis, under Arthritis.

Wrist.—See Wrist Sprain.

Sternal End of the Clavicle, Dislocations of the.—L.; Gr. *στέρνον* breast-bone. See Dislocations of the Clavicle.

Sternomastoid Muscle; Hæmatoma of the.—Gr. *στέρνον* breast-bone; *μαστός* breast + *εἶδος* form. See under Torticollis.

Sternum, Fractures of the.—See Fractures of the Sternum.

Stiff Back.—**Causes.**—Lumbago; Spondylitis Deformans; Pott's disease; metastatic cancer of the vertebræ.

Stiff Finger Joints.—Employ baking (see under Arthritis), massage, manual and vibratory, electricity, active and passive movements, and splints to straighten flexions.

Stiff Great Toe.—See Hallux Rigidus.

Neck.—See Torticollis.

Toe.—See Hallux Rigidus.

Still's Disease.—A chronic, atrophic, probably infectious, polyarthritis of childhood, resembling somewhat the atrophic type of arthritis deformans (*q.v.*), associated with enlargement of the liver, spleen, and glands, and pyrexia. Ankylosis and deformity is the usual outcome, although spontaneous recovery with intact joints is occasionally noted.

Treatment.—In the acute stage of the disease, employ rest and protection of the joints. Flush the bowels thoroughly, and prescribe sour milk (kifolac), as recommended by Hoke, on the assumption that intestinal putrefaction may be causative. Thymus gland, potassium iodide in large doses, and Fowler's solution in gradually increasing doses may be tried experimentally (see Part 11, Drugs). Locally, one may employ hot air (see under Arthritis), electric light baths, the cautery, ichthyol, etc., and, in the absence of acute symptoms, massage and active and passive motion. To overcome contraction deformity, employ forcible manipulation, and if necessary, tenotomy (see Arthritis Deformans). Ankylosed joints may be excised in order to "reëstablish painless motion."

Stoop Shoulders.—See Round or Stoop or Droop Shoulders.

Strain, Sacro-Iliac.—See Sacro-Iliac Strain and Relaxation.

Styloid Process of the Ulna, Fractures of the.—L. *styl'us*, pen + Gr. *εἶδος* form. See Fractures of the Elbow.

Subacromial Bursitis.—L. *sub-* under + Gr. *ἄκρον* point + *ὦμος* shoulder. See Bursitis.

Dislocations of the Clavicle.—See Dislocations of the Clavicle.

Subastragaloid Dislocations.—L. *sub-* under; L. Gr. *ἀστράγαλος* die + *εἶδος* form. See Dislocations, Subastragaloid.

Subclavicular Dislocations of the Shoulder.—L. *clavićula*, dim. of *clav'is*, key. See Dislocations of the Shoulder.

Subcoracoid Bursitis.—Gr. *κορακοειδής* crow-like. See Bursitis.

Dislocations of the Shoulder.—See Dislocations of the Shoulder.

Subdeltoid Bursitis.—Gr. *δελτα* letter Δ + *εἶδος* form. See Bursitis.

Subglenoid Dislocations of the Shoulder.—Gr. *γλήνη* cavity + *εἶδος* form. See Dislocations of the Shoulder.

Subscapular Bursitis.—L. *scap'ula*, shoulder-blade. See Bursitis.

Subspinous Dislocations of the Shoulder.—L. *spiña*, spine. See Dislocations of the Shoulder.

Subtrochanteric Fractures of the Femur.—L., Gr. *τροχαντήρ* runner. See Fractures of the Femoral Shaft.

Superior Maxilla, Fractures of the.—L. *super'ior*, higher; *maxil'la*, jaw-bone. See Fractures of the Upper Jaw.

Suppurative Arthritis.—L. *sub-* under + *pus, pur'is*, pus. See Arthritis.

Supra-acromial Dislocations of the Clavicle.—L. *sup'ra*, above; Gr. *ἄκρον* point + *ὦμος* shoulder. See Dislocations of the Clavicle.

Supracondyloid Fractures of the Femur.—Gr. *κόνδυλος* knuckle + *εἶδος* form. See Fractures of the Femoral Shaft.

Humerus.—See Fractures of the Elbow.

Supracotyloid Dislocation of the Hip.—Gr. *κοτυλοειδής* cup-shaped. See Dislocations of the Hip.

Suprapubic Dislocation of the Hip.—L. *pub'es*, hip-bone. See Dislocations of the Hip.

Surgical Neck of the Humerus, Fractures of the.—L. *chirur'gia*, from Gr. *χείρ* hand + *ἔργον* work. See Fractures of the Humerus.

Swollen Ankles.—See Ankles, Swollen.

Synovitis.—Gr. *σύν* with + *ὠόν* egg + *-ιτις* inflammation. See Arthritis.

Syphilitic Dactylitis.—See Dactylitis Syphilitica.

Talipes Arcuatus.—L. *tal'us*, ankle + *pes*, foot: club foot; *ar'cus*, arch. See Hollow or Contracted Foot.

Talipes Calcaneus.—L. *tal'ipes*, club-foot; *calcañeum*, heel-bone. Dorsal flexion deformity of the foot, with the patient walking solely on his heel.

Causes.—Congenital anomaly; acute poliomyelitis involving the calf muscles (*q.v.*); chronic disease of the ankle joint or lower end of the tibia; anterior cicatricial contraction; traumatism; division of the tendo Achillis; hysteria.

I. Treatment of Congenital Calcaneus.—Retain in the overcorrected position by means of the plaster bandage, as described in principle under Club-Foot, the congenital form (*q.v.*).

II. Treatment of Acquired Calcaneus.—To correct slight cases, massage and stretch the contracted muscles and employ Judson's brace (Fig. 144).

Where moderate deformity has already occurred, overcorrect it as far as possible and apply a plaster bandage (*q.v.*) over a thin board sole. Then place a cork wedge beneath the sole, so as to make it level, and

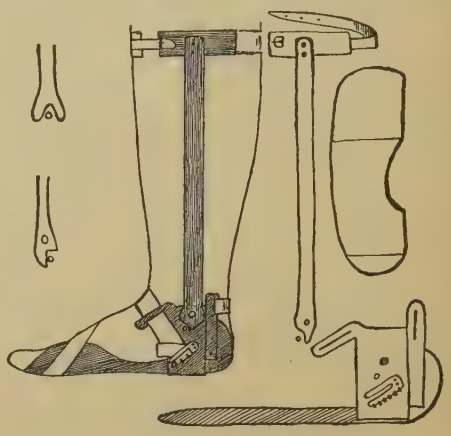


Fig. 144.—Brace for calcaneus deformity.

allow the patient to walk. After the contracted muscles have been sufficiently stretched, apply the Judson brace, and employ massage and manipulation.

Marked deformity is best corrected immediately under anæsthesia. Correct cavus by tenotomy of the plantar fascia and the Thomas wrench, push up the heel, shorten the tendo Achillis if deemed advisable, and fix in plantar flexion with plaster. Get the patient upon his feet as soon as possible; and after two months or longer remove the plaster, and employ for several months a brace which holds the foot at right angles with the leg. Employ also massage and manipulation until cured.

Extreme cases of over two years duration and in those over eight years of age are corrected by Whitman's operation, *e.g.*, "astragalectomy, arthrodesis, tendon transplantation and backward displacement of the foot." (Consult Whitman's *Orthopædic Surgery*.)

Talipes Cavus.—L. *cav'um*, a hollow. See Hollow or Contracted Foot.

Equinovalgus.—L. *eq'uus*, horse; *val'gus*, turned outward. See Talipes Valgus.

Equinovarus.—L. *var'us*, turned inward. See Club-Foot.

Talipes Equinus.—L. *tal'ipes*, club-foot; *equiñus*, equine. Plantar flexion deformity of the foot.

Causes.—Congenital anomaly; paralysis of the anterior leg muscles, due to acute poliomyelitis (*q.v.*), spastic paralysis (*q.v.*), neuritis, hereditary ataxia, progressive muscular atrophy of the peroneal type, pseudohypertrophic paralysis, or locomotor ataxia; fracture; posterior cicatricial contraction; ankle-joint disease (tuberculosis, arthritis deformans, etc.); shortening of the leg following injury or disease; spasm of the tibial muscles; long confinement to bed; injury of the anterior nerves or muscles; hysteria.

I. Treatment of Congenital Equinus.—See Treatment of Congenital Club-Foot.

II. Treatment of Acquired Equinus.—In slight cases of contracture, splint the foot at right angles with the leg for several weeks at a time, and practice forcible manual dorsiflexion.

In more marked cases, immediate correction under anæsthesia is best. If necessary, divide the tendo Achillis, and correct cavus by subcutaneous tenotomy of the plantar fascia and the Thomas wrench; then fix the foot in plaster (*q.v.*) in dorsiflexion, with a wooden foot-plate for a period of two months or longer; but get the patient up and walking in the plaster cast as soon as possible. After two months or longer, remove the plaster, and employ, for several months (or indefinitely in complete paralysis), a brace which holds the foot at right angles with the leg. At night, strap the foot to the leg in dorsiflexion. Employ massage and passive dorsiflexion until cured.

For the flail paralytic drop-foot, with little or no resistance to dorsal flexion, one may employ the two-bar brace (shown in Fig. 145), which has a stop at the ankle to prevent plantar flexion, or to allow limited dorsal and plantar motion. An outer ankle strap for varus and an inner strap for valgus, as shown in the figure, may be worn if required. Operative measures include the shortening of the anterior tendons, and also the suspension of the foot "by braided silk cords from the anterior surface of the lower part of the tibia, woven into the periosteum up, across, and down for a couple of inches; the free ends hanging down are drawn under the skin and sutured to the periosteum, taking in a little bone at the sides of the scaphoid and cuboid through separate small incisions." (H. L. Taylor.)

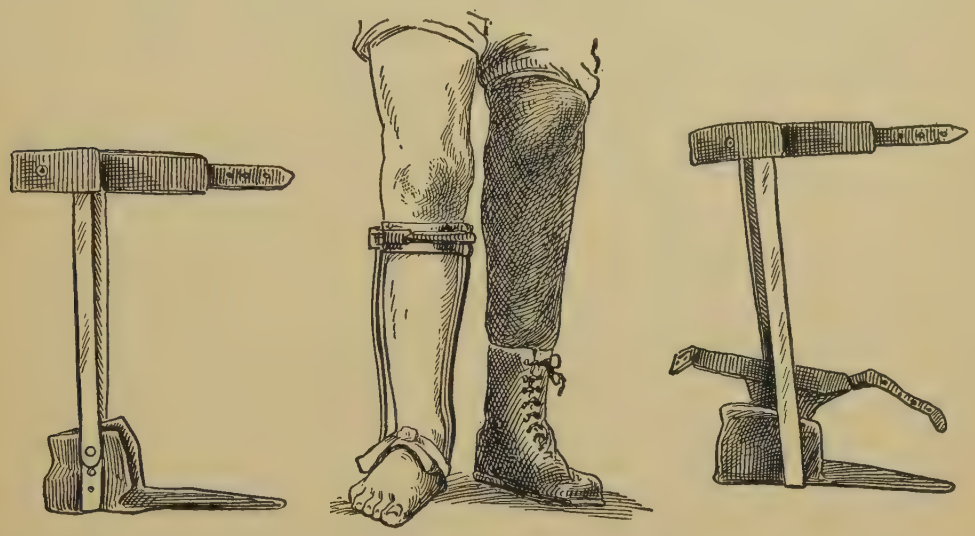


Fig. 145.

Arthrodesis, or fixation of the foot at right angles with the leg by artificial ankylosis, may be resorted to in cases of complete incurable paralysis in those over eight years of age.

Astragalectomy is indicated in "resistant deformity following fracture at the ankle." (Whitman.)

In fixed equinus due to a shortened limb, employ an extension shoe in which the entire sole supports the weight.

Talipes Valgus; Talipes Equinovalgus.—L. *tal'ipes*, club foot; *equiñus*, equine; *val'gus*, turned outward. In talipes valgus the foot is abducted and everted; in equinovalgus there is also slight plantar flexion.

Causes.—Congenital anomaly; paralysis, *e.g.*, acute poliomyelitis (*q.v.*), and spastic paralysis (*q.v.*); joint disease, *e.g.*, tuber-

culosis, arthritis deformans, etc.; Pott's fracture; hysteria.

I. Treatment of Congenital Valgus.—Attempt to correct the deformity by manipulation, with, if necessary, retention in plaster in the equinovarus posture, as described in principle under Club-Foot, the congenital form. When the child begins to walk, treat the condition as directed under Weak Foot.

II. Treatment of Acquired Equinovalgus.—Retain the foot in plaster (*q. v.*), in an attitude of varus, and allow the patient to walk. After the deformity has thus been corrected, fit the patient with a metal brace as for Weak Foot (*q. v.*), and raise the inner border of the sole of the shoe.

Tendon transplantation in cases of over two years duration, and arthrodesis in those over eight years of age may be indicated.

In deformity resulting from Pott's fracture, osteotomy of the tibia above the ankle may be performed.

Talipes Varus.—L. *tal'ipes,* club-foot; *var'us,* inversion. See Club-Foot.

Tarsal Bones, Fractures of the.—L., Gr. ταρσός instep. See Fractures of the Tarsal Bones.

Tuberculosis.—See Ankle Joint and Tarsal Tuberculosis.

Tendon Sheaths, Inflammation of.—L. *teńdo.* See Tenosynovitis.

Lipoma of.—See Lipoma of Joints and Tendon Sheaths.

Tenosynovitis.—Gr. τένων tendon; σύν with ᾠόν egg; -ιτις inflammation. Inflammation of a tendon sheath is manifested by local pain, tenderness, and disability, sometimes swelling, and sometimes a creaking sensation on motion. Suppurative inflammation is characterized by extreme tenderness, limited to the sheath, rigid flexion of the involved finger, and great pain along the sheath on extending the finger.

The palmar tendon sheaths are divisible into three groups: (1) the short sheaths of the index, middle, and ring fingers, (2) the long sheath of the thumb with its prolongation in the hand called the radial bursa, and (3) the long sheath of the little finger, with its prolongation in the palm called the ulnar bursa. The various sheaths may communicate (see Fig. 146.) Pus in the tendon sheaths may rupture into the fascial spaces (*q.v.*, under Hand Infections, in Part 1), and into the forearm, where it is always found beneath the flexor profundus and upon the pronator quadratus and interosseous septum, and following the ulnar artery.

Etiology.—Traumatism, overuse, strain, etc.; gout; rheumatism; infectious diseases; gonorrhœa; staphylococcic and streptococcic infection; tuberculosis; syphilis.

Treatment.—A. Non-Suppurative Tenosynovitis.—Employ rest and compression by means of adhesive straps, an ordinary bandage, or a plaster bandage (*q. v.*); and elevate the affected member. Heated or cold, the cautery, iodine or ichthyol may be

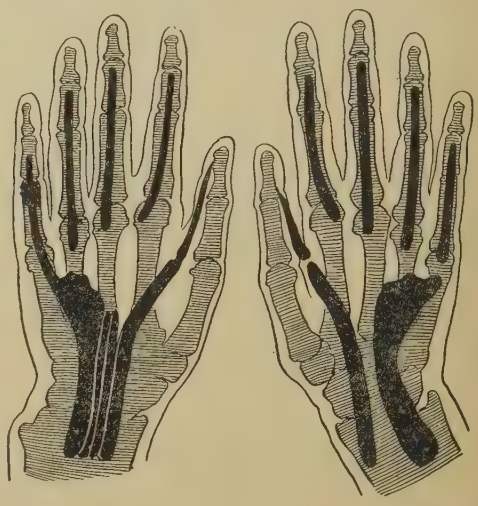


Fig. 146.

applied. P. G. Skillern, Jr., praises the use of a blister in the early stages: "A square inch of fabric 'buttered' with ceratum cantharidis, U.S.P., or an equal area of a 'ready to use' plaster is moistened with olive oil and applied over the inflamed part. It is covered with a dossil of gauze, which is secured by adhesive. The books say to remove the plaster in four to six hours, but practically it works out that as soon as the blister has formed, the cushion of serum interposed between medicament and dermis automatically inhibits vesication. For this reason the blister is removed the next day and the wound dressed with boric ointment (see Part 11.) on surgical lint. Immobilization is now secured. It is astonishing how crepitation-free tendon-play rapidly returns."

Make multiple small incisions if great pain and swelling are present. Resort to moderate active and passive movements as soon as all acute symptoms have subsided, in order to prevent adhesions.

In chronic intractable cases, usually tuberculous, remove the diseased sheath.

B. Suppurative Tenosynovitis.—Split the sheath wide open at the side (not in the median line), but leave bridges over the articulations, to prevent prolapse of the tendon. Drain with gauze saturated with

sterile vaseline or with gutta-percha strips. To prevent a too rapid entrance of toxines into the system, Kanavel applies a broad bandage to the arm, tight enough to compress the veins, but not the arteries. It may be left on for twelve to eighteen hours. The hand may be soaked in hot boric acid or bichloride solution for an hour after the operation. The hand should be kept in extension by means of splints; and should be dressed once or twice a day. As soon as the inflammation has subsided (about three days), begin passive and active movements.

In involvement of the forearm, make a three-inch-long lateral incision, about an inch above the styloid process of the ulna, and on a level with the volar surface of the ulna. Separate the bone from the attached deep fascia, and insert the finger between the pronator quadratus and the overlying

Fig. 147.

tendons. If it is deemed advisable to make a radial counter-opening, push an artery forceps through to the skin of the radial side, and make a free incision here (see Fig. 147.

Should severe hemorrhage occur in a forearm infection, cut down upon the ulnar artery and ligate it.

Involvement of the wrist joint sometimes follows radial bursitis. This is indicated by crepitation, tenderness, swelling, and a fluctuating fulness on the dorsum over the radiocarpal articulation. It calls for curettage of necrosed bone or resection of one or all of the carpal bones. For ankylosis one may try a transplant of fat and fascia into the joint (see also Ankylosis).

If a chronic sinus follows infection, open the sinus and search for a focus of necrosis. Remove all necrotic tissue, whether tendon or bone. (After Allen B. Kanavel).

Thigh, Fractures of the.—See Fractures of the Femoral Neck; and Fractures of the Femoral Shaft.

Thomas Hip-Splint.—See Fractures of the Femoral Neck.

Thomas Knee-Splint.—See Fractures of the Leg, the Shaft.

Thumb, Dislocations of the.—See Dislocations of the Metacarpophalangeal Joints.

Tibia, Dislocations of the.—L. See Dislocations of the Knee; and Dislocations of the Ankle.

Fractures of the.—See Fractures of the Leg, the Shaft; and Fractures of the Leg, the Lower End.

Tibial Spine, Fracture of the.—See under Displacement of a Semilunar Cartilage.

Tibiotarsal Dislocations.—See Dislocations of the Ankle.

Toe, Great, Abduction of the.—L. *ab-* from + *du'cere*, to draw. See Hallux Valgus.

Adduction of the.—L. *ad-* to + *du'cere*, to draw. (See Pigeon-Toe.

Painful.—See Painful Great-Toe Joint.

Rigid.—See Hallux Rigidus.

Hammer.—See Hammer-Toe.

Painful Great.—See Painful Great Toe-Joint.

Pigeon.—See Pigeon-Toe.

Rigid Great.—See Hallux Rigidus.

Torticollis; Wryneck.—L. *tor'tus* twisted + *col'lum*, neck. **Etiology.**—Congenital shortening and atrophy of the sternomastoid muscle, nearly always the right, rarely the trapezius; congenital osseous deformity (very rare); cervical rib (see Part 1); rupture of the sternomastoid muscle at birth; muscular traumatism; cicatricial contraction produced by burns or disease; exposure to cold producing myalgia or muscular rheumatism ("stiff-neck"); furunculus; cellulitis; lymphadenitis; tonsillitis, and pharyngitis; parotitis; otitis; mastoiditis; dental caries; lesions of the mediastinal glands; suboccipital arthritis, due to local infection, rheumatism or infectious disease; occipital neuralgia; occupation neurosis, observed in tailors, cobblers, pavers, seamstresses, and hat-makers; voluntary habit; ocular defects; marked scoliosis; psychical defect (of will); unilateral dislocation of the cervical spine; paralysis, due to acute poliomyelitis, diphtheria; rheumatism, traumatism, bone caries, progressive muscular atrophy and bulbar paralysis, nerve compression by meningeal exudates, apoplexy; muscular spasm, due to heredity, overstudy, anxiety, shock, an habitual constrained position of the head, intestinal intoxication; spondylitis deformans; cervical Pott's disease; rarely syphilis, vaccinia, malaria, influenza, chorea, debility, rickets, epilepsy, meningitis, hemiplegia, hysteria.

Treatment.—This depends, of course, upon the cause (*q.v.*). The X-ray is of diagnostic service in doubtful cases.

In rupture of the sternomastoid muscle

with the formation of a hæmatoma, apply hot fomentations, to promote the absorption of the extravasated blood, and massage the parts gently with a bland oil (olive or cotton-seed oil or vaseline or lard), at the same time stretching the affected muscle by tilting the head. Do this several times a day, and in the meantime see that the head is kept in a proper posture. If necessary, a Thomas collar, made high on the side toward which the head inclines, may be worn; it may be made of thick cotton covered with a bandage and two-inch adhesive plaster (see also Fig. 148).

In old cases, after the third year of age, where there is shortening of an inch or more, the contracted parts require division by subcutaneous tenotomy or an open incision (consult the standard textbooks). Then the head is fixed in a plaster support, in the overcorrected position, for four to eight weeks, followed by massage, manipulation, stretching exercises, and suspension by means of the Sayre head-piece.

Fig. 148.—Thomas collar.

In rheumatic torticollis ("stiff neck"), employ rest, hot fomentations or liniments (see Part 11, Drugs), oil of wintergreen or ung. capsici, locally, and the salicylates (sod. salicylate, aspirin, salol), with or without antipyrine or phenacetin internally. To keep the head at rest and relieve pain, apply a thick collar of cotton, made high on the side toward which the head tilts, and covered with a bandage and wide adhesive plaster to make it stiff; or apply splints of moulded felt.

In spasmodic torticollis, sedative drugs are recommended, *e.g.*, belladonna or atropine, hyoscyamus or hyoscine, cannabis indica, bromides, gelsemium. In the experience of Sachs, however, the foregoing drugs are "not worthy of trial," excepting fluid extract of gelsemium, one or two drops every four hours, very gradually increased, up to five, ten, or fifteen drops, never more than twenty drops, to be discontinued if double vision occurs. Morphine is more effectual but should not be used. Sachs also recommends the full rest treatment (see Neurasthenia, in Part 1); but declares that "electricity is practically useless." Massage may be beneficial. Employ antiluetic treatment and eliminate intestinal intoxication, if either lues or the latter is suspected. Systematic coördinative gymnastic movements of the head are advisable.

An operation, however, will probably be eventually required, viz., resection of the spinal accessory and posterior branches of the upper cervical nerves, and muscle section (consult the standard textbooks).

In paralytic torticollis, employ massage and electricity to improve the nutrition and tone of the affected muscles.

Toxic Arthritis.—Gr. *τοξικόν* poison. See Arthritis.

Trachea, Fractures of the.—L.; Gr. *τραχεῖα* rough. See Fractures of the Trachea.

Traumatic Dislocations.—Gr. *τραῦμα* wound. See Dislocations.

Fractures.—See Fractures.

Spondylitis.—Gr. *σπόνδυλος* vertebra + *-ιτις* inflammation. See under Kyphosis.

Synovitis.—Gr. *συν* with + *ᾠόν* egg + *-ιτις* inflammation. See Arthritis,

Trigger-Finger.—**Synonyms.**—Lock-finger; snapping finger; jerk-finger.

Etiology.—Interference with the motion of the tendon in its sheath, due to congenital defects, trauma, overuse, gout, arthritis deformans.

Treatment.—"It may in mild cases disappear spontaneously" (H. L. Taylor). Rest, massage, manual or vibratory, and soothing applications "will effect a cure in many cases" (R. W. Lovett). Otherwise, slit open the tendon sheath, and remove the obstacle to free motion, which may be a ganglion, loose cartilage, tendon nodule, or sesamoid bone.

Trochanters, Fractures of the.—L.; Gr. *τροχαντήρ* runner. See Fractures of the Femoral Shaft.

T-shaped Fractures of the Humerus into the Elbow Joint.—See Fractures of the Elbow.

Tuberculosis of the Ankle.—L. *tuber'culum*, nodule. See Ankle Joint and Tarsal Tuberculosis.

Carpus.—L. *car'pus*, wrist. See Tuberculosis of the Wrist.

Elbow.—See Elbow Tuberculosis.

Fingers.—See Tuberculosis of the Long Bones of the Hand and Foot.

Tuberculosis of the Foot, the Long Bones.—See Tuberculosis of the Long Bones of the Hand and Foot.

Hand, the Long Bones.—See Tuberculosis of the Long Bones of the Hand and Foot.

Tuberculosis of the Hip.—See Hip.

Knee.—See Knee Tuberculosis.

Tuberculosis of the Long Bones of the Hand and Foot.—The characteristic symptoms are pain, tenderness, and a fusiform swelling. It must be distinguished from syphilitic dactylitis.

Treatment.—Secure absolute rest by means of splints, which should be kept on for months, and employ compression with adhesive plaster. If the joint is involved, amputation of the affected finger or toe may be advisable. If a single carpal or metacarpal bone is affected, excise the diseased parts.

Tuberculosis of the Metacarpal Bones.—Gr. μετά beyond + καρπός wrist. See Tuberculosis of the Long Bones of the Hand and Foot.

Metatarsal Bones.—Gr. μετά beyond + ταρσός tarsus. See Tuberculosis of the Long Bones of the Hand and Foot.

Phalanges.—Gr. φάλαγξ phalanx. See Tuberculosis of the Long Bones of the Hand and Foot.

Sacro-Iliac Joint.—See Sacro-Iliac Tuberculosis.

Shoulder.—See Shoulder Tuberculosis.

Spine.—L. *spĭna*, spine. See Pott's Disease.

Tarsus.—See Ankle Joint and Tarsal Tuberculosis.

Tuberculosis of the Wrist.—The characteristic symptoms are local pain, tenderness, heat, and swelling, limitation of motion due to muscle spasm, and muscular atrophy.

Treatment.—Splint the wrist, in an attitude of moderate dorsal flexion, by means of a plaster bandage applied from the ends of the fingers to the elbow. If, however, flexion deformity is present, overcome it gradually by a series of plaster splints applied about every two weeks. Bier's passive hyperæmia (*q.v.*) may be tried.

When the disease has become quiescent, shorten the lower end of the splint up to the heads of the metacarpal bones, and enjoin daily movement of the fingers.

Excise the affected parts if conservative treatment fails.

Early excision is usually to be advised in adults. Amputation is indicated in cases of extensive destruction.

Tuberosities of the Humerus, Fracture of the.—L. *tuberŏsitas*, broad eminence. See Fractures of the Humerus.

Tumor Albus.—L., white swelling. See Knee Tuberculosis.

Typhoid Spine.—The occurrence of very acute and painful spinal symptoms late in the course of typhoid fever, sometimes associated with disturbances of the reflexes, cramps in the legs, and paralysis, with involvement of the bladder and rectum.

The condition is usually cured in six months.

Treatment.—Fix the patient upon a Bradford bed frame, as in acute Pott's disease, until the very acute symptoms have subsided; then employ a plaster jacket or Taylor brace, as described under Pott's Disease (*q.v.*). The Paquelin cautery may be of service for the relief of pain. The condition may be hysterical (Osler).

Ulna, Dislocations of the.—L. See Dislocations of the Elbow, and Dislocations of the Wrist.

Fractures of the.—See Fractures of the Elbow; and Fractures of the Forearm, the Shaft.

Ulno-Radial Dislocation.—See Dislocations of the Wrist.

Union, Delayed.—See General Considerations, under Fractures.

Vicious.—See General Considerations, under Fractures.

Upper Jaw, Fractures of the.—See Fractures of the Upper Jaw.

Valgus.—L., turned outward. See Talipes Valgus.

Varus.—L., turned inward. See Club-Foot.

Velpeau Bandage.—See Bandaging.

Vertebræ, Dislocations of the.—L. See Dislocations of the Spine.

Fractures of the.—See Fractures of the Spine.

Vicious Union.—See General Considerations, under Fractures.

Villous Arthritis.—L. *villósus*, covered with villi; Gr. ἄρθρον joint + -ιτις inflammation. Hypertrophy of the synovial membrane and villi, secondary to trauma, flat-foot, arthritis deformans, tuberculosis, syphilis, or other joint affection. Fatty degeneration (lipoma arborescens) may occur (see Lipoma of Joints and Tendon Sheaths).

Crepitation, creaking, snapping, and interference with motion may occur on walking, and also occasional attacks of pain and swelling due to injury to the hypertrophied masses. The diagnosis, however, is usually made only on exploratory incision.

When pain and swelling occur, strap the joint, or splint it with pasteboard strips held in place by a bandage, or apply a snugly fitting kneecap. Light manual or vibratory massage, electricity, and heat are of service. Any possible causal influence should be corrected.

In intractable cases, it is necessary to excise the hypertrophied masses.

Weak Ankle.—See Weak Foot, below.

Weak Foot.—**Synonyms.**—Flat-foot; splay-foot; pes planus; pes valgus; talipes valgus.

"The deformity (pronation or abduction of the foot) is essentially a displacement of the astragalus on the bones of the tarsus." (R. W. Lovett.)

Etiology.—Congenital anomaly; improper attitude, particularly turning the feet outward in walking; improper shoes (cramping the toes and heel; and high heels); weak muscles and ligaments due to poor health, old age, exhausting illness, childbirth, laborious occupation, rapid growth, overweight, prolonged standing on hard floors, rickets, poliomyelitis, spastic paralysis; sprain; fracture, especially Pott's fracture; shortened gastrocnemius muscle; ankle joint disease (tuberculosis, gonorrhœa, arthritis deformans, etc.); corns and bunions.

Treatment.—Moderate cases may be corrected by the following means, viz.: (1) comfortably fitting shoes with ample toe space, low, broad heels, and the inner border of the heel and sole about one-quarter inch thicker than the outer; (2) frequent throwing of the weight on the outer border of the feet while standing; (3) tip-toe exercises practiced twice daily to the point of fatigue: standing with the toes directed inward, the patient raises and lowers himself upon the toes, and while descending rolls the feet into the attitude of adduction; (4) walking with the feet held parallel and pointing forward and with the weight thrown upon the outer side; (5) the Barron ladder.

If the above measures prove insufficient, a brace must be resorted to, following the correction of bone displacement by means of active and passive manipulation to the limit in all directions, particularly adduction and supination, aided by massage and the application of heat. The brace is made from a plaster cast, as described by Whitman thus: Upon a rather low chair in front of the patient who is seated is placed a thick pad of cotton-batting covered with cotton cloth upon which is poured plaster-of-Paris of the consistency of thick cream. The outer side of the patient's foot, dusted and rubbed with talcum powder, is allowed to sink into the plaster, with the sole perpendicular to the seat of the chair and the foot slightly adducted and slightly plantar flexed. The free border of the cotton cloth with its contained plaster is then raised and pressed against the sole of the foot, covering a little more than half. After the plaster has hardened, its upper border is greased with vaseline and the remainder of the sole covered with plaster. The two half-moulds are then removed, bound together, dusted with talcum and filled with plaster cream to make a cast of the foot (its plantar aspect). The cast should stand upright and not incline to one side or the other. Upon it the outline of the brace is drawn as illustrated in Fig. 149.

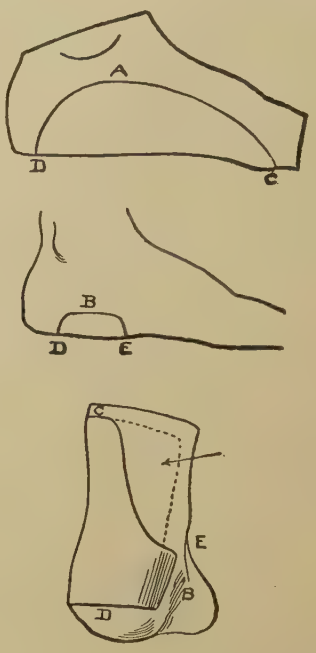


Fig. 149.—*a*, about half an inch below the malleolus, well above all the prominent bones; *b*, enclosing the calcaneo-cuboid junction; *c*, the great toe joint; *d*, the center of the heel; *e*, a point just behind the base of the fifth metatarsal bone. The extension represented by the dotted line is for "very heavy subjects" and for depression of the anterior metatarsal arch (see Anterior Metatarsalgia). After Whitman.

The best sheet steel, 18 to 20 gauge, is used. It is moulded upon the plaster model and tempered. It may be galvanized, tin-plated, or nickel-plated.

The inner border of the sole and heel of the shoe should be thickened, the exercises before described should be followed, and massage and passive movements in all directions, particularly dorsal flexion and adduction to the full limit, should be practiced twice daily. After several months, it may be advisable to make a second cast, "to conform to the improved contour" of the foot. After about six months, if the

faulty attitude has been corrected, the brace may be gradually discarded; but in chronic cases it may have to be continued indefinitely. Emphasis, however, is to be laid upon the importance of correct attitude and appropriate exercises, and the elimination of braces, if possible.

In painful, swollen cases, employ rest, massage, soaking in hot water, alternate hot and cold douches, or hot air, until the acute symptoms have subsided, before resorting to the brace.

Where there is resistance to the correction of deformity, due chiefly to muscle spasm, the latter may be overcome gradually by adducting the foot as far as possible, and holding it thus by a wide band of adhesive plaster, passing from just below the external malleolus beneath the arch and up the inner side of the leg to the knee, and supported by straps about the instep, ankle, and calf, and covered by a bandage. The adhesive strapping is to be renewed at intervals until normal adduction is possible. If desired, however, the deformity may be reduced at once, under anæsthesia, as described below.

Fig. 150.

In rigid flat foot, due chiefly to adhesions and contractions, correct the deformity forcibly, under anæsthesia, as follows: Forcibly extend, flex, abduct, and adduct the foot repeatedly to the normal limits, using the block (Fig. 150) and Thomas wrench (Fig. 151), if necessary, until perfect flexibility is obtained. In some cases the tendo Achillis may have to be divided, and occasionally also the peronei (hook them up through an incision behind the lower part of the fibula and excise one or two inches). H. A. Wilson's flat-foot correction screw may be used, it is stated, without an anæsthetic.

After the rigidity has been overcome, put the foot up in an overcorrected position (extreme adduction and supination) in plaster (*q.v.*), over thick cotton, extending to the knee.

After three or four weeks, during which the patient should walk about upon the cast, remove the latter, and prepare a plaster model of the foot for a Whitman brace. Then reapply the plaster bandage, and retain until the brace is ready.

On finally removing the plaster splint, if the foot is swollen and painful, employ hot air (see under Arthritis), prolonged soaking in hot water, and massage for several days. Thereafter, once or twice daily, forcibly adduct and flex the foot dorsalward and plantarward, to the normal limits, the patient assisting by active efforts, and continue this "from day to day until there is no longer a sensation of pain or tension." About three to six weeks from the beginning of treatment are required for a cure; but the brace should be worn indefinitely. The shoes should be raised on the inner border, and the exercises and postures already described should be followed. (Chiefly from Whitman.)

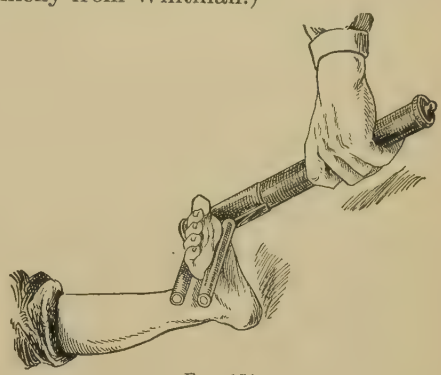


Fig. 151.

In congenital flat foot, manipulate the foot into the correct position, and fix it thus with a plaster bandage, renewed at intervals. Tenotomy may be required. Support the arch with a brace when the child begins to walk.

White Swelling.—See Knee Tuberculosis.

Wrist, Dislocations of the.—See Dislocations of the Wrist.

Fractures of the.—See Fractures of the Wrist.

Wrist-Sprain.—Exclude fracture by means of the X-ray.

In acute sprain, strap the hand, wrist, and lower forearm with adhesive plaster, after shaving the skin.

In chronic sprain, employ massage, hot air (see under Arthritis), the thermocautery, electricity, ionization (*q.v.*), Bier's passive hyperæmia, and plaster strapping when the joint is in use.

Wrist Tuberculosis.—See Tuberculosis of the Wrist.

Wryneck.—See Torticollis.

Y-shaped Fractures of the Humerus into the Elbow Joint.—See Fractures of the Elbow.

APPENDIX

The Orthopædic Armamentarium.—1. **Orthopædic Apparatus.**—Plaster-of-Paris; felt; straps; pulleys; clothesline; fifteen one-pound weights; Glisson chin and occiput sling; sandbags; corset lacings; Bradford and Lovett hammock frame; muslin, gauze, cotton flannel and flannelette bandages; plaster bandages; Goldthwait, Metzger-Goldthwait, or R. L. Taylor apparatus; Starr's forked support; Sayre headpiece, for applying plaster jackets with the patient suspended; mill-board or oakum; Volkmann spoon; iodoform gauze; needle-holder and needles; sterile gauze and cotton; aspirating needle and syringe; knives; bone and rib instruments; rubber catheter; Bier's suction cups; glass syringe for injecting bismuth paste; X-ray machine; adhesive plaster; ionization outfit (see Part 1); dumbbells; Bradford-Lovett frame; moleskin (yellow) plaster; ether mask; wheeled couch; crutches; cotton wadding; basswood strips or malleable steel; cloth straps and buckles; Gallie's suitcase hip and shoulder rest; Schultze's hip rest; Sanderson's portable hip and shoulder rest and extension apparatus; Echols hip rest and traction appliance; flushing curette; Bradford-Goldthwait genuclast; Peter's wrench; soft rubber bandage; hot air apparatus; jurymast; block; Thomas wrench; H. A. Wilson's flat-foot correction screw; bunion plaster; vibrasage machine; bone forceps; periosteal elevator; Paquelin cautery; half-inch trephine; chisel and gouge; knee-cap; Zander machine; electric light bath; vapor bath; rubber tissue; high frequency current; genuclast; static electricity; joint aspirating needle; alcohol lamp; water glass solution; ice-bags; sinusoidal current; dry cups; cotton-wool; specially designed motor saw for cutting out piece of tibia for Albee's bone grafting in spinal caries.

2. Internal Drugs Mentioned in the Text.—(a) ANTIRHEUMATICS.—Sodium salicylate; aspirin, oil of wintergreen; salicylic acid.

(b) ALTERATIVES AND TONICS (L. *altera're* to change; *tońus*, tone).—Potassium iodide; comp. tr. gentian; tr. nucis vomicæ; cod-liver oil; hypophosphites; syr. iodide of iron; Fowler's solution; mercury, arsenious acid; Blaud's pills; guaiacol carbonate; thyroid gland extract; quinine; dilute hydrochloric acid; sulphur; guaiacum; guaiacol; phosphorus; pituitary extract; urotropine; strychnine.

(c) NEUROMUSCULAR SEDATIVES (L. *sedo*, I allay).—Ether; chloroform; Dover's powder; tr. belladonna; bromides; hyoscyamine; cannabis indica; fl. ext. gelsemii; morphine; hyoscine; aspirin; pyramidon; phenacetin; antipyrine; codeine.

(d) HÆMOSTATICS (Gr. *αἷμα* blood + *στατικός* standing).—Calcium chloride, lactate, and citrate; thymus gland extract; suprarenal gland; fresh human, horse or rabbit serum; antidiphtheritic serum.

(e) PURGATIVES (L. *purgar'e*, to cleanse).—Castor-oil; sulphur; sodium phosphate.

(f) VACCINES AND SERA.—Antigonoccoccus serum and vaccine.

(g) DIURETICS (Gr. *διά* through + *οὖρον* urine).—Potassium citrate; spt. æth. nitrosi; potassium bitartrate.

(h) DIAPHORETICS (Gr. *διά* through + *φορεῖν* to carry).—Aspirin; Dover's powder; liq. ammon. acet.

(i) VEHICLES AND FLAVORS.—Syr. simplex; aq. camphoræ; spt. menthol.

3. Local Medicinal Agents Mentioned in the Text. (a) ANTISEPTICS.—Alcohol; iodoform; bismuth subnitrate free from arsenic; formaline; carbolic acid; sodium chloride; tr. iodi; zinc chloride; balsam of Peru; ichthyol; oil of wintergreen; ung. capsici; iodine-vasogen; beta-naphthol; sodium carbonate; chloroform liniment; spt. menthol; sodium bicarbonate; menthol.

(b) VEHICLES AND PROTECTIVES.—Talcum; glycerine; petrolatum molle; white wax; soft paraffin; spermaceti; oil of sesame; gelatine; olive-oil.

(c) MISCELLANEOUS.—Mustard; flaxseed; lead and opium wash.

Fracture and Dislocation Equipment.—(a) WORKING MATERIAL.—Fracture box (see Fig. 133); Volkmann's sliding splint, for use with Buck's extension in fractures of the femur; double inclined plane for fractures of the lower end of the femur; Thomas hip-splint; Thomas knee-splint; long wooden external T-splint; thin splint wood or basswood, $\frac{3}{16}$ inch in thickness; iron wire, $\frac{1}{4}$ inch in diameter; Cabot posterior wire splint for adult leg; Smith anterior wire splint for adult leg; Hodgen's modification of Smith's anterior splint; buckles and straps; muslin and flannel roller bandages; muslin slings:

heavy cardboard; wooden Mitteldorpf triangle; steel tape-measure; heavy scissors; jack-knife; zinc oxide adhesive plaster, three inches wide; tin strips and cypress wood strips; dental rubber No. 2; crinoline strips, four yards long, stitched together, two, three, or four inches wide, washed free of glue in warm water and thoroughly rinsed and dried; plaster-of-Paris bandages in sealed metal cans; dental plaster-of-Paris, sold in five-pound cans, or better, moulder's plaster-of-Paris; sheet wadding, purchasable in dry-goods stores; cotton batting; cheese cloth; Levis perforated metal splints, two sizes, for children and adults; bronze aluminum or silver wire; fine copper wire; bed-pan; Bradford frame; rope and pulleys; measuring tape; X-ray machine; razor; sterile gauze; needles, needle-holder, and silk, catgut, silkworm-gut, and chromicisedcat gut; galvanic and Faradic currents; amputation instruments; Zander's apparatus; hot-air apparatus; absorbent wool; shellac; U-shaped piece of iron used in the treatment of open fractures; scalpels; Roe's elevator of nasal bones; narrow-bladed hæmostatic forceps; Asch's tubes; Seiler's tablets for making Seiler's solution; Cobb's external nasal splint; Coolidge's external nasal splint; ether mask; curved steel urethral sound; rubber catheter with rubber tubing and funnel attached for nasal feeding; No. 26 gauge German silver wire; external metal contrivances for holding the fragments in fractures of the lower jaw in place; metal chin piece, with straps and buckles; ice-bags.

Tracheotomy Instruments: blunt retractor, sharp tenaculum, sharp- and probe-pointed scalpels; tracheal dilator; tracheotomy tube with pilot.

Dieulafoy or Potain thorax aspirator; small plain towels; safety-pins; straight pins; kangaroo tendon; cardboard or thin wood ⅛ inch thick; internal, right angle, perforated metal splint for upper extremity; finger-cots; rubber tubing; strips of metal for reinforcing plaster-of-Paris; material for perineal bands; long sandbags; sheet wadding; cradle to protect legs from weight of bed clothing; wheel chair; Verity gas-pipe frame; clothesline; straps and buckles; ¼-inch thick wire for making the Cabot posterior wire frame; elastic rubber bandage; sea-sponges; tin or cypress wood strips; thin copper wire for binding together the ends of Cabot's posterior wire splint; air cushions; cotton wool; rubber rings.

(b) Local Medicaments.—Talcum powder; zinc oxide; starch; dermatol; alcohol; tr. iodi; boric acid; aristol; cocaine; Dobell's solution; tr. benzoin; bismuth; iodol; peroxide of hydrogen; balsam of Peru; castor-oil.

(c) Anæsthetics (Gr. *ἀν* not + *αἴσθησις* sensation).—Morphine; chloroform; ether.

(d) Alteratives and Tonics (L. *altera're*, to change; *ton'us*, tone).—Thyroid extract; potassium iodide; strychnine; arsenic; iron; quinine; phosphorus.

PART 11

ALPHABETICAL LIST OF DRUGS, WITH THEIR DOSAGE, METHOD OF ADMINISTRATION, PHYSIOLOGIC AND TOXIC ACTION, AND USES

(The dosage for children is chiefly from Kerley, partly from Holt, partly from other sources)

Acacia (Gum Arabic, soluble in 2 of water; practically insoluble in alcohol).

Acaciæ, Mucilago (acacia 35, distilled water to 100).

Adult Dosage.—℥ii-iv-vi.

Physiologic Action and Uses.—Demulcent. Used to suspend insoluble powders in mixtures.

Acaciæ, Syrupus (10 per cent.; should be freshly made).

Physiologic Action and Uses.—Demulcent. Used to suspend insoluble powders in mixtures.

Acetanilidi, Pulvis Compositus (acetanilid 70, caffeine 10, sodium bicarbonate 20).

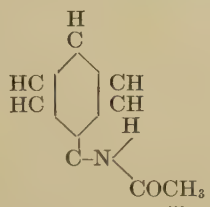
Adult Dosage.—Min., gr. v; av., viiss; max., x.

Method of Administration.—℞ Pulveris acetanilidi compositi, gr. viiss.

Mitte talis pulveres no. 8.

Sig.—One powder three or four times a day, as required.

Acetanilidum; antifebrin (soluble in 190 of water; 3.4 of alcohol).



Adult Dosage.—Min., gr. i; av., iii; max., v.

Method of Administration.—℞ Acetanilidi, gr. iss–ii.

Mitte talis pulveres sive tabellæ vel capsulæ, no. 8.

Sig.—One every hour or two, until effectual; or three or four times a day, as required. Tablets should be crushed before swallowing.

Physiologic Action and Uses.—Analgesic; nervous sedative; antipyretic acting upon the heat-regulating centre. An unsafe drug, now largely replaced by phenacetin. Local antiseptic and analgesic.

Toxic Action.—Cardiovascular and respiratory depression; sweating, vomiting, cyanosis, methæmoglobinæmia and methæmoglobinuria, collapse; a dangerous drug.

Aceticum, Acidum (CH_3COOH, 36 per cent. in water).

Use.—Local escharotic.

Toxic Action.—Gastro-enteritis.

Aceticum, Acidum, Dilutum (acetic acid 10, distilled water 50; contains 6 per cent. of absolute acetic acid).

Adult Dosage.—Min., ♏xv; av., xxx; max., ℥iii.

Uses.—Refrigerant; diuretic; urinary acidifier (oxidized into carbonic acid); antiseptic; hæmostatic; anthelmintic.

Aceticum, Acidum, Glaciale, CH_3COOH.

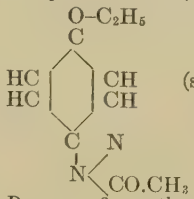
Use.—Local escharotic.

Toxic Action.—Gastro-enteritis.

Acetonum; Dimethyl-ketone: $\begin{matrix} CH_3 \\ CH_3 \end{matrix}\!\!>\!CO$ (miscible with water, alcohol, ether, and chloroform).

Use.—Pharmaceutic solvent.

Acetphenetidinum; Phenacetin:



(soluble in 1310 of water; 15 of alcohol.)

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years gr. iss; 5 years, gr. ii. Adult min., gr. v; av., x; max., xv.

Method of Administration.—℞ Acetphenetidini, gr. v.

Mitte talis pulveres sive tabellæ vel capsulæ no. 22.

Sig.—One powder or tablet as required, or about every three hours. Allow no more than 20 to 60 grs. in twenty-four hours to an adult.

Physiologic Action and Uses.—Analgesic; nervous sedative; hypnotic; antipyretic, lessening heat production (comparatively safe). Local antiseptic.

Toxic Action.—Cardiovascular and respiratory depression, dyspnœa, sweating, cyanosis, vomiting, methæmoglobinæmia and methæmiglobinuria, collapse.

Acetum Cantharidis.

Uses.—Rubefacient and vesicant.

Toxic Action.—Gastro-enteritis, strangury, priapism, hæmaturia, abortion, convulsions, coma.

Acetum Scillæ (10 per cent. in dilute acetic acid, biologically assayed).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Aceti Scillæ (biologically assayed), ℥ss.

Sig.—15 drops in water, three or four times daily.

Physiologic Action and Uses.—Expectorant; diuretic; slows and strengthens the heart, and raises the arterial pressure.

Toxic Action.—Vomiting, purging, strangury, hæmaturia, convulsions, paralysis.

Acetylsalicylicum, Acidum; Aspirin: $C_6H_4O(CH_3CO).COOH$. 1 : 2 (soluble in 100 of water, freely in alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii–iii; 5 years, gr. iii–v. Adult, min., gr. v; av., x; max., xx.

Method of Administration.—℞ Acidi acetylsalicylici, gr. v–xv.

Mitte talis capsulæ sive pulveres in charta cerata no. 12.

Sig.—One, four or five times a day, or every three hours, until salicylism (ringing in the ear, etc.) is noted.

Physiologic Action and Uses.—Antirheumatic; antipyretic; analgesic; diaphoretic; disinfectant of the pancreatic ducts, through which it is excreted.

Toxic Action.—Symptoms of salicylate poisoning. (*q.v.*)

Acidi Arsenosi, Liquor (arsenic trioxide 1 per cent., in dilute hydrochloric acid 5 per cent., and water).

Method of Administration.—℞ Liquoris acidi arsenosi.

Sig.—♏iii, well diluted, t.i.d.p.c.

Acidi Borici, Unguentum (boric acid 10, paraffin 10, white petrolatum 80).

Uses.—Antiseptic, emollient and protective.

Acidi Carbolici, Glyceritum (liquid phenol 20; glycerine 80).

Adult Dosage.—Min., ♏iii; av., v; max., x.

Method of Administration.—℞ Glyceriti acidi carbolici, ℥i.

Sig.—15 minims in two tablespoonfuls of warm water, as a mouth-wash.

Physiologic Action and Uses.—Antiseptic. Fats, vegetable oils, and glycerine, however (excepting lanoline and liquid petrolatum), almost prevent the germicidal action of phenol.

Acidi Carbolici, Trochisci (gr. ¼) et mentholis (gr. 1/20).

Uses.—Throat antiseptic and anodyne.

Acidi Carbolici, Unguentum (Phenol 3, white petrolatum 97).

Uses.—Antiseptic emollient.

Acidi Citrici, Syrupus (citric acid 1, distilled water 1, tr. of lemon peel 50 per cent. 1, syrup to 100).

Adult Dosage.—Indefinite.

Uses.—Flavor and vehicle for salty substances, such as bromides.

Acidi Hydriodici, Syrupus (1 per cent. of HI).

Dosage.—5 years, ♏v–x. Adult, min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Syrupi acidi hydriodici, ℥ii.

Sig.—One dram, well diluted, t.i.d.

Uses.—Alterative; used also for coughs.

Acidi Pyrogallici, Unguentum (Pyrogallic acid or pyrogallol, tri-hydroxy-benzene, $C_6H_3(OH)_3$, 1 part, lard 8 parts).

Method of Administration.—It should not be applied to a large surface, for fear of absorption.

Uses.—Antiseptic emollient.

Toxic Action.—Vomiting, diarrhœa, rigors, fever, nephritis.

Acidi Salicylici, Collodium (10 to 20 per cent.).

Uses.—Keratolytic for corns and calluses.

Acidi Salicylici, Unguentum.

Method of Administration.—℞ Acidi salicylici, gr. v–x–xxx–xlviii; Petrolati et Adipis lanæ hydrosi, aa, ℥ss.

Uses.—Antiseptic, parasiticide, keratolytic.

Acidi Tannici, Glyceritum (Tannic acid 1, glycerine 4).

Adult Dosage.—♏xxx.

Method of Administration.—Throat paint. As a gargle or spray: ℥i ad aquam Oi.

Uses.—Astringent; hardening agent for sore nipples.

Acidi Tannici, Trochisci (gr. i).

Uses.—Throat astringent.

Acidi Tannici, Unguentum (20 per cent. in glycerine and petrolatum).

Uses.—Astringent emollient; useful in the treatment of hemorrhoids.

Acidum Aceticum (36 per cent. of CH_3COOH in water).

Uses.—Local caustic; rubefacient; parasiticide.

Toxic Action.—Gastro-enteritis.

Acidum Aceticum Dilutum (acetic acid 10, distilled water 50; contains 6 per cent. of absolute acetic acid).

Adult Dosage.—Min., ♏xv; av., xxx; max., ℥iii.

Physiologic Action and Uses.—Refrigerant; diuretic; diaphoretic; urinary acidifier (oxidized into carbonic acid); hæmostatic; anthelmintic; antiseptic.

Acidum Aceticum Glaciale, CH_3COOH.

Uses.—Local escharotic.

Toxic Action.—Gastro-enteritis.

Acidum Acetylsalicylicum; Aspirin: $(C_6H_4)O.(CH_3CO).COOH$. 1:2 (soluble in 100 of water, freely in alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii–iii; 5 years, gr. iii–v. Adult, min., gr. v; av., x; max., xx.

Method of Administration.—℞ Acidi acetylsalicylici, gr. v–xv.

Mitte talis capsulæ sive pulveres in charta cerata, no. 12.

Sig.—One, four or five times a day, or every three hours, until salicylism (ringing in the ear, etc.) is noted.

Physiologic Action and Uses.—Antirheumatic; antipyretic; analgesic; diaphoretic; disinfectant of the pancreatic ducts, through which it is excreted.

Toxic Action.—Symptoms of salicylate poisoning. (*q.v.*)

Acidum Agaricum, $C_{19}H_{36}OH(COOH)_3+1\frac{1}{2}H_2O$.

Adult Dosage.—Min., gr. 1/12; max., ⅓.

Method of Administration.—℞ Acidi agarici tabellæ, gr. ⅙.

Sig.—One tablet by mouth at bedtime. Give no more than gr. iss in one day. Owing to its irritant action it cannot be given hypodermically.

Physiologic Action and Uses.—Anhidrotic, paralysing the peripheral nerves of the sweat glands. The action appears in a few hours, and is not lasting.

Toxic Action.—Purgation and vomiting.

Acidum Arsenosum; Arseni trioxidum: As_2O_3 (soluble in about 100 of water; readily soluble in solutions of acids or alkalies).

Dosage.—18 months, gr. 1/200; 3 years, gr. 1/150; 5 years, gr. 1/100. Adult, min., gr. ¼; av., 1/30; max., 1/10.

Method of Administration.—℞ Acidi arsenosi, gr. 1/60.

Mitte talis tabellæ no. 24.

Sig.—Two tablets, t.i.d.p.c., gradually increased by gr. 1/60, t.i.d.

Uses.—Stomachic; tonic; alterative; hæmatinic; antiseptic. Local escharotic.

Toxic Action.—Œdema and itching or burning of the eyelids, salivation, nausea, and vomiting, epigastric pain and soreness, diarrhœa, thirst, anorexia, burning in the mouth, belching, skin eruptions, albuminuria, odor of garlic on the breath, brownish pigmentation, hyperkeratoses of the skin, multiple neuritis, feeble and irritable heart, fatty degeneration of the viscera.

Acidum Benzoicum: $C_6H_5.COOH$ (soluble in 275 of water, 2.3 of alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii; 5 years, gr. iii–v. Adult, min., gr. v; av., viii; max., xv.

Method of Administration.—℞ Acidi benzoici, gr. viii.

Mitte talis pulveres sive trochisci no. 12.

Sig.—One powder or wafer dissolved in water every two to four hours.

Physiologic Action and Uses.—Urinary acidifier (excreted partly as hippuric acid); diuretic; diaphoretic; antiseptic.

Acidum Boricum, H_3BO_3 (soluble in 18 of water, 18 of alcohol, 4 of glycerine).

Adult Dosage.—Min., gr. v; av., x; max., xxv.

Method of Administration.—℞ Acidi borici, gr. x.

Mitte talis pulveres no. 12.

Sig.—One powder dissolved in water, three or four times daily. Give no more than ℥i a day.

For local use: One to four drams to the pint; 4 per cent. is a saturated solution.

Uses.—Urinary acidifier and antiseptic; local antiseptic. Glycerine used as a solvent of boric

acid in aqueous solution more or less destroys its antiseptic value (Goodrich).

Toxic Action.—Vomiting, purging, albuminuria, headache, insomnia, subnormal temperature, feeble pulse, depression, erythematous eruption with swelling, followed by exfoliation, muscular weakness, collapse.

Acidum Camphoricum.

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Acidi camphorici, gr. xv.

Mitte talis pulveres no. 12.

Sig.—One powder, dry on the tongue, t.i.d., or about two hours before the expected sweat.

Physiologic Action and Uses.—Anhidrotic; intestinal disinfectant; sedative action on the respiratory centre.

Acidum Carbolicum (Phenol), C_6H_5OH.

Adult Dosage.—Min., gr. i; max., iii.

Method of Administration.—℞ Acidi carbolici liquefacti, ℥i.

Sig.—One drop in one tablespoonful of water every fifteen minutes for three or four hours.

Physiologic Action and Uses.—Gastric sedative and antiseptic; local antiseptic in strength of gr. v ad ℥i; disinfectant in 5 per cent. strength, or 1 : 20, local anæsthetic and caustic; antipruritic.

Toxic Action.—Gastritis, fall of temperature, fall of blood-pressure, slowing of the heart and respiration, smoky urine, collapse, stupor, coma, convulsions, paralysis.

Acidum Chromicum; Chromii Trioxidum: CrO_3 (soluble in 0.6 of water).

Method of Administration.—To fuse the acid on the end of a probe, first warm the probe, dip it in the chromic acid crystals, and then warm the part of the probe next beyond the crystals until the latter melt.

Uses.—Caustic.

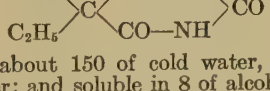
Acidum Citricum: $H_3C_6H_5O_7+H_2O$ (soluble in 0.5 of water and 1.8 of alcohol).

Adult Dosage.—Min., gr. v; av., viiss; max., xv.

Method of Administration.—Acidi citrici, gr. xvii, ad aquam ℥ss is equivalent to fresh lemon juice, ℥ss.

Uses.—Refrigerant.

Acidum Diæthylbarbituricum; Veronalum:



(soluble in about 150 of cold water, about 12 of boiling water; and soluble in 8 of alcohol).

Adult Dosage.—Min., gr. v; av., x; max., xv.

Method of Administration.—℞ Veronali, gr. v, pulveres, tabellæ, vel capsulæ no. 6.

Sig.—One, one and one-half to two hours before bedtime, followed by a cupful of hot water, tea, or milk.

Keep the bowels active with salines, and give alkalies, on prolonged use of the drug.

Physiologic Action and Uses.—Hypnotic; gr. viii have been fatal; relatively safe in small doses; begins to act in about half an hour.

Toxic Action.—Abdominal pain, sweating, pyrexia erythema, neuralgia, nausea, vomiting, oliguria, glycosuria, ataxia, somnolence deepening to coma, trembling and restlessness during the sleep, fall of temperature.

Acidum Gallicum (soluble in 87 of water, 4.6 of alcohol, 10 of glycerine).

Adult Dosage.—Min., gr. v; av., xv; max., xx.

Method of Administration.—℞ Acidi gallici, gr. xv.

Mitte talis pulveres, capsulæ, sive tabellæ no. 12.

Sig.—One, three or four times daily.

Uses.—Astringent; hæmostatic.

Acidum Hydriodicum Dilutum (10 per cent. of HI by weight).

Adult Dosage.—Min., ♏v; av., x; max., lx.

Method of Administration.—℞ Acidi hydriodici diluti, ℥i.

Sig.—Ten drops in a tablespoonful of water, t.i.d.

Uses.—Alterative; used also for coughs.

Acidum Hydrobromicum Dilutum (10 per cent. of HBr).

Adult Dosage.—Min., ♏xx; av. ℥i; max. ℥ii.

Method of Administration.—℞ Acidi hydrobromici diluti, ℥ii.

Sig.—One dram, well diluted, every three or four hours.

Uses.—Nervous sedative.

Acidum Hydrochloricum Dilutum (10 per cent. of HCl by weight).

Dosage.—6 months, gt. ¼ to ½; 18 months, gt. i; 3 years, gtt. ii; 5 years, gtt. iii–v. Adult, min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Acidi hydrochlorici diluti, ℥ii.

Sig.—20 drops in half a tumbler of sweetened albumen water, taken through a straw or glass tube, during and one-half to one hour after meals. Rinse the mouth afterward with soda water.

Uses.—Digestant; antiseptic and antifermentative; astringent. Astringent gargle.

Acidum Hydrocyanicum Dilutum (2 per cent. of HCN by weight; keep tightly stoppered in a cool, dark place; it will decompose within a year).

Adult Dosage.—Min., ♏i; av., iss; max., iii (not drops).

Method of Administration.—℞ Acidi hydrocyanici diluti, ♏iv; aquam, ad, ℥iv.

M. Sig.—One dram, repeated if necessary.

Uses.—Gastric analgesic and sedative.

Toxic Action.—Palpitation, cardiac depression, dizziness, tinnitus, vomiting, muscular weakness, dyspnœa, salivation, headache, numbness; often insensibility, convulsions or rigidity and death.

Acidum Hypophosphorosum Dilutum (10 per cent. of H_3PO_2 in water).

Adult Dosage.—Min., ♏v; av., x; max., xx.

Method of Administration.—℞ Acidi hypophosphorosi diluti, ℥ii.

Sig.—20 drops in water, t.i.d.

Uses.—Aphrodisiac.

Acidum Lacticum (75 per cent. by weight).

Dosage.—18 months, gt. i; 3 years, gtt. ii; 5 years, gtt. iii–v. Adult, min., ♏xx; av., xxx; max., lx.

Method of Administration.—℞ Acidi lactici et syrupi simplicis, aa, ℥i.

M. Sig.—One dram in water every two hours.

Uses.—Intestinal antifermentative; local antiseptic. Caustic in pure form : dissolves protein and keratin.

Acidum Monochloraceticum.

Uses.—Caustic.

Acidum Nitricum, HNO_3.

Method of Administration.—Apply by means of a glass rod or matchstick, with the surrounding healthy tissue protected by vaseline.

Uses.—Caustic.

Acidum Nitricum Dilutum (10 per cent. of HNO_3 by weight).

Adult Dosage.—Min., ♏x; av., xxx; max., xl.

Method of Administration.—℞ Acidi nitrici diluti, ℥i.

Sig.—30 drops in a wineglassful of water, t.i.d., taken through a glass tube. Rinse the mouth afterward with soda water.

Uses.—Cholagogue; acid.

Acidum Nitrohydrochloricum Dilutum (nitric acid 4, hydrochloric acid 18, water 78 vols.; should be freshly prepared).

Adult Dosage.—Min., ♏v; av., xv; max., xx.

Method of Administration.—℞ Acidi nitrohydrochlorici diluti, ℥i.

Sig.—Fifteen drops in a wineglassful of water, t.i.d., taken through a glass tube. Rinse the mouth afterward with soda water.

Uses.—Cholagogue; acid.

Acidum Oleicum (practically insoluble in water; partially soluble in 60 per cent. alcohol).

Uses.—Emollient; solvent for making oleates.

Acidum Oxalicum: $\begin{matrix}COOH\\|\\COOH\end{matrix}$ (soluble in 10 of water).

Adult Dosage.—Min., gr. 1/10; av., 1/4; max., 1/2.

Method of Administration.—℞ Acidi oxalici, gr. iv. Syrupi limonis, ℥ii.

M. Sig.—One dram, t.i.d.

Uses.—Emmenagogue.

Toxic Action.—Burning pain in the throat and abdomen, vomiting, small, irregular pulse, collapse, stupor, sometimes convulsions, respiratory paralysis.

Acidum Phenylcinchoninicum; Atophan: $C_6H_5C_9H_5N.(COOH)$ (insoluble in water; only slightly soluble in alcohol).

Adult Dosage.—Min., gr. viii; max., xv.

Method of Administration.—℞ Acidi phenylcinchoninici, gr. xv, pulveres 12.

Sig.—One powder, suspended in a glassful of water, two or three times a day, (or eight grains four times a day), together with sodium or potassium bicarbonate, ℥iss-iii +, daily, to prevent the deposition of free uric acid in the urinary tract.

Physiologic Action and Uses.—Diuretic; causes a markedly increased excretion of uric acid by the kidneys.

Acidum Phosphoricum Dilutum (10 per cent. of orthophosphoric acid, H_3PO_4).

Dosage.—6 months, gtt. i–ii; 18 months, gtt. ii–iii; 3 years, gtt. v; 5 years, gtt. x. Adult, min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Acidi phosphorici diluti, ℥ii.

Sig.—Twenty drops in a wineglassful of water, t.i.d.

Uses.—Stomachic; alterative; refrigerant beverage.

Acidum Picricum (Trinitrophenol, $C_6H_2OH(NO_2)_3$; soluble in 78 of water and 12 of alcohol).

A one per cent. solution (gr. lxxvii ad Oi) was once extensively used for burns. It should not be applied to a large surface, for fear of absorption.

Uses.—Local antiseptic, analgesic, and coagulant.

Toxic Action.—Nausea, vomiting, diarrhœa, strangury, anuria, yellow staining of the skin and mucous membranes.

Acidum Pyroligneum.

Method of Administration.—℥iii–v ad aquam Oii, as a vaginal douche in senile vaginitis. (Bandler.)

Acidum Salicylicum: $C_6H_4(OH)COOH$ (soluble in 460 of water, but readily soluble in 10 per cent. sodium phosphate solution; soluble in 2.7 of alcohol).

Adult Dosage.—Min., gr. v; av., x; max., xx.

Method of Administration.—℞ Acidi salicylici, ℥iss; sodii phosphatis, ℥iii; aquæ, q.s. ad, ℥iv.

M. Sig.—One tablespoonful, well diluted, every four hours.

For gastric lavage, gr. xv ad Oi.

As a dusting powder, 2 to 5 per cent., with boric acid, talcum, starch, or zinc oxide.

Uses.—Antirheumatic and antipyretic; local antiseptic, parasiticide, and keratolytic.

Toxic Action.—Nausea, vomiting, tinnitus, sense of fulness in the head, disturbances of sight and hearing, sweating, mydriasis, delirium, dyspnœa, slow pulse, nephritis.

Acidum Sodiophosphatum; Sodii Biphosphas: $NaH_2PO_4+H_2O$. (Very soluble in water).

Adult Dosage.—Min., gr. xv; av., xxx; max., ℥i.

Method of Administration.—℞ Sodii biphosphatis, ℥iv; syrupi simplicis, ℥i; aquæ destillatæ, q.s. ad, ℥iv.

M. Sig.—One tablespoonful in water every three hours.

It may be given up to one ounce a day in 100 ounces of distilled water.

Physiologic Action and Uses.—Urinary acidifier. Do not administer hexamethylenamine until after the acid phosphate has left the stomach.

Acidum Sulphuricum Aromaticum (an ether, consisting of sulphuric acid, H_2SO_4, 11 per cent. by volume in alcohol, flavored with cinnamon and ginger).

Adult Dosage.—Min., ♏v; av., xv; max. xx.

Method of Administration.—℞ Acidi sulphurici aromatici, ℥i.

Sig.—Fifteen drops in a wineglassful of sweetened water, every three or four hours, taken through a glass tube. Rinse the mouth afterward with soda water.

Uses.—Astringent; hæmostatic; urinary acidifier.

Acidum Sulphuricum Dilutum (10 per cent. of H_2SO_4 by weight).

Adult Dosage.—Min., ♏v; av., xxx; max., xl.

Method of Administration.—℞ Acidi sulphurici diluti, ℥i.

Sig.—Thirty drops in half a glass of sweetened water, every three or four hours, taken through a glass tube. Rinse the mouth afterward with soda water.

Uses.—Astringent; hæmostatic; urinary acidifier.

Acidum Sulphurosum, H_2SO_3.

Adult Dosage.—Min., ♏v; av., xxx; max., lx.

Method of Administration.—Antiseptic spray or application to mucous membranes and skin.

Uses.—Local antiseptic; gastric antifermentative.

Acidum Tannicum; Tannin (soluble in 1 of water; very soluble in alcohol and glycerine.)

Adult Dosage.—Min., gr. ii; av., x; max., xx.

Method of Administration.—℞ Acidi tannici, gr. x.

Mitte talis trochisci sive pilulæ sive capsulæ no. 12.

Sig.—One t.i.d.

As a gargle or spray ℥i ad Oi, or gr. v-x ad ℥i.

As an astringent enema, 1 to 2 per cent. solution.

Suppository for hemorrhoids, gr. viii.

Physiologic Action and Uses.—Astringent; hæmostatic. It coagulates protein in or on the tissues, and thus hardens them.

Toxic Action.—Vomiting due to gastric irritation.

Acidum Tannicum Diacetylicum; Tannigen ($CH_3CO)_2C_{14}H_8O_9$.

Dosage.—6 months, gr. i–ii; 18 months, gr. i–ii, 3 years, gr. ii–iii; 5 years, gr. iii–v. Adult, Min. gr. viii; Max., xv.

Method of Administration.—℞ Tannigen, gr. x, pulveres no. 12.

Sig.—One, four times a day, dry on the tongue, followed by a swallow of water; or it may be sprinkled on food

It may be given up to ℥ii daily.

Physiologic Action and Uses.—Astringent; insoluble in the gastric juice, but splits off tannic acid in the alkaline fluids of the intestine.

Acidum Tartaricum (soluble in 0.75 of water, and in 3.3 of alcohol).

Adult Dosage.—Min., gr. v; av., x; max., xx.

Method of Administration.—Twenty grains exactly neutralize 22 grains of sodium bicarbonate, with the effervescence of carbon dioxide gas.

Physiologic Action and Uses.—Mild acid; used in the manufacture of effervescent salts.

Toxic Action.—Vomiting.

Acidum Trichloraceticum: CCl_3COOH.

Uses.—Caustic; styptic.

Acoin (Alkyloxyphenylguanidin).

Method of Administration.—0.1 to 0.3 per cent. solution by instillation.

Uses.—Local anæsthetic and bactericide.

Aconitina: $C_{34}H_{47}NO_{11}$ (Aconitine crystalisée of Dequesnel; alkaloid).

Adult Dosage.—Min., gr. $\frac{1}{800}$ av., $\frac{1}{400}$; max., $\frac{1}{200}$.

Method of Administration.—℞ Aconitinæ, gr. $\frac{1}{400}$, pillulæ no. 10.

Sig.—One pill every four to two hours.

Physiologic Action and Uses.—Circulatory sedative, analgesic, diaphoretic, and antipyretic, indicated in beginning fevers with high temperature, rapid, strong pulse, and dry, hot skin. It slows and steadies the heart by stimulating the vagus roots, lowers the blood-pressure, slows the respiration, and depresses the peripheral nerve terminations, especially the sensory. It should be used temporarily only in sthenic subjects with vascular excitement. Local counter-irritant and anæsthetic.

Toxic Action.—Cardiac and respiratory depression, weak, irregular pulse, dyspnœa, fall of blood-pressure and temperature, feeling of chilliness and general weakness, general tingling sensations, sense of faucial constriction, salivation, perhaps nausea and vomiting, dilatation of the pupils, collapse.

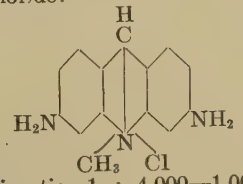
Aconiti Tinctura (10 per cent. assayed biologically).

Dosage.—6 months, gt. ¼; 18 months, gt. ½; 3 years, gt. i; 5 years, gtt. i–ii. Adult, min., ♏i; av., iii; max., ix.

Method of Administration.—℞ Tincturæ aconiti (assayed biologically), ℥i.

Sig.—One drop in water every fifteen minutes until effectual, or 1 to 5 drops every one to two hours, as required; no more than ♏xxxv in one day. (See Aconitina, above.)

Acriflavine; Trypaflavine; 3-6 diamino-10-methyl-acridinium chloride:



Uses.—Antiseptic, 1 : 4,000—1,000 in normal saline solution (0.85 per cent).

Addison's Pill.—℞ Pulveris digitalis, gr. i; pulveris scillæ, gr. i; hydrargyri chloridi mitis, gr. ¼.

Misce et fiat pilula.

Sig.—One pill twice daily.

Uses.—Cardiovascular tonic, diuretic, laxative.

Adeps Benzoinatus (1 to 2 per cent. of powdered benzoin in hog lard).

Uses.—Ointment basis, used particularly when absorption is desired.

Adeps Lanæ Hydrosus; Hydrous Wool-fat of the sheep; Lanolin (miscible with about twice its weight of water).

Uses.—Ointment basis, employed when it is desired that the medicament be absorbed by the skin.

Adhesive Plaster; Emplastrum Adhæsivum (rubber 2, petrolatum 2, lead plaster 96).

Adhesive plaster may be removed by means of a small quantity of oil of wintergreen. (Potter.)

Adonidinum (a glucoside: $C_{24}H_{40}O_9$).

Adult Dosage.—Min., gr. ⅙; max., ⅓.

Method of Administration.—℞ Adonidini, gr. ⅓. Mitte talis tabellæ no. 18.

Sig.—One tablet four to six times daily.

Physiologic Action and Uses.—Cardiovascular tonic; diuretic; slows and strengthens the heart, and raises the arterial tension; slows and strengthens the respiration.

Toxic Action.—Nausea, vomiting, diarrhœa, rapid heart action.

Adonis Vernalis, Fluidextractum.

Adult Dosage.—Min., ♏ss; av., ii; max., v.

Method of Administration.—℞ Fluidextracti adonis vernalis, ℥i.

Sig.—Three drops in water, four to six times daily.

Physiologic Action and Uses.—Cardiovascular tonic; diuretic; slows and strengthens the heart, and raises the arterial tension; slows and strengthens the respiration.

Toxic Action.—See under Adonidinum.

Adonis Vernalis, Infusum.

Adult Dosage.—Min., ℥i; max., iv.

Method of Administration.—℞ Infusi adonis vernalis recentis, ℥iv.

Sig.—Four drams every two to four hours.

Physiologic Action and Uses.—Cardiovascular tonic; diuretic; slows and strengthens the heart, and raises the arterial tension; slows and strengthens the respiration.

Toxic Action.—See under Adonidinum.

Adrenal Gland (fresh sheep's gland, kept on ice; 1 gland = about 2 mg. of adrenalin).

Method of Administration.—Grind up with glycerine and normal saline solution, 1 teaspoonful to the ounce, allow to stand for half an hour, filter through muslin, and take at once—one or two or more a day.

Uses.—Used in Addison's Disease and in hæmatemesis.

Adrenal Gland, Powdered (about 0.5 per cent. of epinephrin).

Adult Dosage.—Min., gr. iii; av., v; max., xx.

Method of Administration.—℞ Glandulæ suprarenalis siccæ, gr. v–xx.

Mitte talis pulveres no. 21.

Sig.—One powder, by mouth, t.i.d.

Gr. ii + every half hour, to a one-year old, for hæmatemesis. (Holt.)

Uses.—Used in Addison's Disease and in hæmatemesis.

Adrenalinum Chloridum, 1 : 1000 solution (♏x ≡ gr. $\frac{1}{100}$ of the chloride). See also Epinephrin.

Dosage.—18 months, ♏ii; 3 years, ♏v; 5 years, ♏v. Adult, min., ♏v; av., x; max., xxx.

Method of Administration.—℞ Adrenalini chloridi, 1 : 1000, ℥i.

Sig.—Ten to thirty drops in a teaspoonful of water, by mouth, every one to four hours, for two or three doses.

If given hypodermically, it should be administered in one pint of normal saline solution, very slowly.

Physiologic Action and Uses.—Hæmostatic; stimulates the vaso-constrictor nerve endings, thereby also raising the blood-pressure. Its effects last only a few minutes. See also Epinephrin.

Toxic Action.—Facial pallor, rise in blood-pressure, tachycardia, general trembling, glycosuria, due to stimulation of glycogen transformation in the liver, albuminuria, necrosis of liver and kidney cells, atheroma of vessels. Unless well diluted with normal saline solution, the hypodermic administration of adrenalin may produce fibrillation of the ventricles.

Æther $(C_2H_5)_2O$ (soluble in 12 of water).

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Ætheris, ℥ss.

Sig.—Fifteen to thirty drops, in sweetened water, every hour, or as required. Hypodermically, for heart-failure, ♏x–xx–lx.

Physiologic Action and Uses.—Cardiovascular stimulant; stimulant of the vaso-constrictor and respiratory centres; anodyne; carminative; antispasmodic; sedative; general anæsthetic (contraindicated in bronchial and renal disease.)

Toxic Action.—Undue slowing of the respiration, and rapid heart action. *Treatment.*—Lower the patient's head, draw the tongue forward, but not too far, perform artificial respiration, apply heat to the trunk and limbs, slap the face and chest with a cold, wet towel, administer strychnine and atropine hypodermically.

Ether pneumonia is possibly due to the aspiration of mucus and saliva, the secretion of which is increased by ether. This may be lessened or prevented by a hypodermic of atropine or scopolamine just before the administration of the ether.

Conditions in which anæsthesia is dangerous: cardiac degeneration or dilatation, renal disease, pulmonary disease, asthma, diabetes mellitus, arteriosclerosis, chronic alcoholism, cerebral tumor, fainting spells, enlarged tonsils.

Ætheris Spiritus (Ether, ⅓, alcohol ⅔).

Adult Dosage.—Min., ♏x; av., ʒi; max., ii.

Method of Administration.—℞ Spiritus ætheris, ʒi.

Sig.—Teaspoonful in a wineglass of sweetened water, as required, or every one to three hours.

Uses.—Diffusible stimulant; anodyne; carminative; aids digestion of fats.

Ætheris Spiritus Compositus (Hoffmann's anodyne: ether 32½, alcohol 65, ethereal oil 2½).

Dosage.—6 months, gtt. ii; 18 months, gtt. iii–v; 3 years, gtt. v; 5 years, gtt. v–x. Adult, min., ʒss; av., i; max., ii.

Method of Administration.—℞ Spiritus ætheris compositi, ʒi.

Sig.—One teaspoonful in a wineglass of water, as required, or every one to three hours.

Physiologic Action and Uses.—Diffusible stimulant; anodyne; carminative; aids digestion of fats.

Ætheris Spiritus Nitrosi (Sweet Spirits of Nitre: ethyl nitrite, $C_2H_5NO_2$, 4 per cent. in alcohol; miscible with alcohol or water; should not be kept long, as it turns acid).

Dosage.—6 months, gtt. ii–iii; 18 months, gtt. iii–v 3 years, gtt. v; 5 years, gtt. v–x. Adult, min., ʒss; av., i; max., ii.

Method of Administration.—℞ Spiritus ætheris nitrosi, ʒi.

Sig.—One teaspoonful well diluted in sweetened water, every one to three hours.

Uses.—Diaphoretic; diuretic; carminative.

Æthylis Carbamas; Urethane: $NH_2.CO.O(C_2H_5)$ (soluble in 0.45 of water, and in 0.8 of alcohol).

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—In powder, cachets, or solution, best gr. v, frequently repeated, as a full dose may cause vomiting. (Potter.)

Uses.—Very mild hypnotic, diuretic.

Æthylis Chloridum, C_2H_5Cl.

Physiologic Action and Uses.—Transient general anæsthetic; local anæsthetic in the form of a spray, producing intense cold.

Æthylis Hydrocupreinæ Hydrochloridum; Optochin (a quinine alkaloid) Hydrochloride: $C_{19}H_{22}N_2.OH.O.C_2H_5.HCl$.

Adult Dosage.—Av., gr. viiss t.i.d.

Method of Administration.—One to 2 per cent. aqueous solution, freshly prepared, or 1 to 2 per cent. solution in oil or ointment: specific in serpent ulcer of the cornea due to the pneumococcus; 1 to 2 per cent. solution as a gonococcicide.

For pneumonia, 0.024 gram per kilogram of body weight every twenty-four hours is required to produce a bactericidal action in the blood serum. Thus, for the average sized individual, the amount for twenty-four hours is 1.5 grams, administered as follows: initial dose, 0.45 gram, followed every three hours by 0.15 gram; second twenty-four hours, ten doses of 0.15 gram; best given in capsule. (Allan M. Chesney.)

Uses.—Antiseptic; antipneumococcic.

Toxic Action.—Tinnitus, deafness, amblyopia, amaurosis; retinitis.

Æthylis Iodidum, C_2H_5I.

Adult Dosage.—Av., ♏xv.

Method of Administration.—On lint, inhaled, in asthma.

Uses.—Antispasmodic; general stimulant; anæsthetic.

Æthylmorphinæ Hydrochloridum; Dionin (soluble in 8 of water; 22 of alcohol.)

Dosage.—6 months, gr. 1/100; 18 months, gr. 1/100; 3 years, gr. 1/50; 5 years, gr. 1/20. Adult, min, gr. ⅛; av., ¼; max., ½.

Method of Administration.—℞ Æthylmorphinæ hydrochloridi, gr. ¼, tabellæ no. 6.

Sig.—Tablet two or three times a day, as required.

As a local ophthalmic analgesic and lymphagogue, a 4 to 10 per cent. aqueous solution, 1 drop three or four times a day; or 1.5 to 10 per cent. ointment. Chemosis, redness, and burning should continue for from one to two minutes after its application, in order to secure the desired therapeutic effect.

Physiologic Action and Uses.—Nervous sedative and analgesic; action upon the respiratory and cough centres the same as that of codeine; ophthalmic analgesic and lymphagogue, causing local hyperæmia and acute conjunctival œdema.

Agaricinas Sodii.

Adult Dosage.—Min., gr. ii; max., iv.

Method of Administration.—℞ Sodii agaricinatis, gr. ii, capsulæ no. 6.

Sig.—One or two capsules, at bedtime.

Uses.—Anhidrotic.

Agar-Agar (a gelatinous carbohydrate obtained from certain varieties of Asiatic seaweed).

Dosage.—3 to 5 years, ʒi. Adult, Min., ʒi; av., ʒiiss; max., ʒi.

Method of Administration.—To be taken, t.i.d., in apple sauce or mashed potatoes, with no water immediately afterward, continued for six to eight weeks, gradually reducing the dose. Contraindicated in marked atony. (Ortner.)

Physiologic Action and Uses.—Laxative, by virtue of the fact that it is not digested or absorbed, and has an affinity for fluids.

Agarici Albi, Extractum Alcoholicum.

Adult Dosage.—Av., gr. iii.

Method of Administration.—℞ Extracti alcoholici agarici albi, gr. iii.

Mitte talis pulveres sive pilulæ no. 6.

Sig.—One at bedtime.

Physiologic Action and Uses.—Anhidrotic, paralyzing the secretory nerve-endings like atropine.

Toxic Action.—Vomiting and purging.

Agarici Albi Pulvis.

Adult Dosage.—Min., gr. x; max., xv.

Method of Administration.—℞ Pulveris agarici albi, gr. x–xv.

Mitte talis pulveres no. 6.

Sig.—One powder at bedtime.

Physiologic Action and Uses.—Anhidrotic, paralyzing the secretory nerve-endings like atropine.

Toxic Action.—Vomiting and purging.

Agaricum, Acidum, $C_{19}H_{36}OH(COOH)_3+1\frac{1}{2}H_2O$.

Adult Dosage.—Gr. ½ to ⅓.

Method of Administration.—℞ Acidi agarici, tabellæ, gr. ⅛.

Sig.—One tablet, by mouth, at bedtime.

Give no more than gr. iss in one day. Owing to its irritant action it cannot be given hypodermically.

Physiologic Action and Uses.—Anhidrotic, paralyzing the peripheral nerves of the sweat glands. The action appears in a few hours and is not lasting.

Toxic Action.—Vomiting and purging.

Agurin (Theobrominæ Sodio-acetas): $NaC_7H_7N_4O_2 + NaC_2H_3O_2$ (soluble in water).

Adult Dosage.—Min., gr. v; max., xv+.

Method of Administration.—℞ Theobrominæ sodio-acetatis, gr. xv.

Mitte talis trochisci sive capsulæ sive pulveres no. 12.

Sig.—One, t.i.d., in water.

Physiologic Action and Uses.—Diuretic (non-irritating); does not irritate the stomach.

Albolenum Liquidum (petroleum product).

Method of Administration.—Instilled with a medicine dropper, or sprayed with an oil atomizer.

Uses.—Emollient; lubricant.

Alcohol: C_2H_5OH (Ethyl Alcohol).

Dosage.—See Whiskey or Brandy.

Method of Administration.—See Whiskey or Brandy.

Uses.—Local antiseptic; astringent; rubefacient; and refrigerant. See Alcohol Dilutum.

Toxic Action.—Chronic alcoholism: gastritis, dilatation of the stomach, renal and hepatic disease, delirium tremens, peripheral neuritis, insanity.

Alcohol Dilutum (alcohol and distilled water, equal parts).

Uses.—Local antiseptic; astringent; rubefacient; and refrigerant. Diluted alcohol is more antiseptic than pure alcohol because the latter causes coagulation. Fifty per cent. is the optimum strength.

Alkaline Bath. See Baths, Medicated.

Allii, Infusum (Garlic Infusion) (2 or 3 bulbs, chopped up, and boiled in 1 quart of water or milk, and strained).

Method of Administration.—Inject one-third high into the colon on successive days.

Uses.—Anthelmintic.

Allii, Oleum.

Adult Dosage.—Gtt. ii, t.i.d.

Allii Sativi Succus (fresh).—℥i every 4 to 6 hours, ℥ss for a child under 12 years, best in syrup. (Minchin). Recommended by Minchin as an antiseptic and antitubercular. The fresh bulb may be held in the mouth and scored occasionally with the teeth. The fresh juice with equal parts of water may be used for the nose and throat.

Allii Syrupus (Garlic 20 per cent. in sweetened dilute acetic acid; active principle, allyl sulphide $(C_3H_5)_2S$).

Dosage.—5 years, ℥i. Adult Min., ℥i; max., ℥iv.

Method of Administration.—℞ Syrupi alii, ℥ii.

Sig.—One to four teaspoonfuls, according to age, t.i.d.

Uses.—Irritant expectorant; anthelmintic; nervous sedative.

Toxic Action.—Gastric irritation, flatulence, hemorrhoids, headache and fever.

Almond Oil. See Oleum Amygdalæ.

Aloes Extractum.

Adult Dosage.—Min., gr. ss; av., iii; max., viiss.

Method of Administration.—℞ Extracti aloes, pilulæ, gr. iii, no. 24.

Sig.—A pill at bedtime.

Physiologic Action and Uses.—Purgative; acts in eight to ten hours, chiefly on the lower bowel, producing pelvic congestion; emmenagogue.

Aloes et Ferri Pilulæ.

Adult Dosage.—Min., 1; av., 2; max., 5.

Method of Administration.—℞ Pilulæ aloes et ferri, no. 24.

Sig.—One pill t.i.d.p.c.

Uses.—Purgative; hæmatic; emmenagogue.

Aloes et Myrrhæ Pilulæ.

Adult Dosage.—Min., 1; av., 2; max., 5.

Method of Administration.—℞ Pilulæ aloes et myrrhæ, no. 24.

Sig.—One pill, t.i.d.

Uses.—Purgative; emmenagogue.

Aloes Pilulæ.

Adult Dosage.—Min., 1; av., 2; max., 5.

Method of Administration.—1 to 2 to 5 pills at bedtime.

Uses.—Purgative.

Aloinum.

Adult Dosage.—Min., gr. ss; av., i; max., ii.

Method of Administration.—℞ Aloini, gr. i, pilulæ no. 24.

Sig.—One pill at bedtime, with plenty of water and a cracker or other food.

Uses.—Purgative.

Toxic Action.—Renal irritation.

Alumen, $AlK(SO_4)_2+12H_2O$ (soluble in 7.2 of water; practically insoluble in alcohol).

Adult Dosage.—Min., gr. v; av., viiss; max., x; ℥i as an emetic.

Method of Administration.—Gr. v–xv–xxiv ad ℥i as an astringent lotion for mucous membranes.

For urethral injection: 0.5 to 1 per cent. solution.

Uses.—Astringent; hæmostatic; styptic; emetic.

Toxic Action.—Gastro-intestinal irritation.

Alumini Acetas: $Al(C_2H_3O_2)_3$.

Method of Administration.—Alumini acetatis, ℥i–iii ad Oi, for local use.

Uses.—Astringent; antiseptic.

Alumini Acetatis, Liquor.

Method of Administration.—1. ℞ Aluminii sulphatis, ℥iiiss; Acidi acetici, ℥ivss; aquæ, ℥x.

2. ℞ Calcii carbonatis, ℥iss; aquæ, ℥iiss.

Add 1 to 2, stirring. (Kerley.)

Uses.—Astringent and antiseptic lotion.

Alumini Subacetatis, Liquor $(Al(C_2H_3O_2)_2OH$, about 8 per cent.).

Method of Administration.—Dilute usually with about four to nine parts of water.

Uses.—Astringent and antiseptic lotion.

Alumnol; Alumini Naphtholsulphonas, $Al_2(C_{10}H_6.OH.(SO_3)_2)_3$.

Method of Administration.—0.5 to 5 per cent. solution, for local use.

Uses.—Antiseptic; astringent.

Alypin (Hydrochloride of 2-benzoxy-2-dimethyl-amino-methyl-l-dimethyl-amino-butane: $CH_3.CH_2.C(C_6H_5COO)[CH_2N(CH_3)_2].CH_2N:(CH_3)_2.HCl$.

Method of Administration.—10 per cent. solution externally; 1 to 4 per cent. hypodermically; 1 to 2 per cent. solution in the eye; 5 to 6 drops of a 5 per cent. solution for vomiting.

Uses.—Local anæsthetic; about half as toxic as cocaine.

Ammoniæ Aqua (10 per cent. by weight of NH_3).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Aquæ ammoniæ, ℥i

Sig.—Five to thirty drops, well diluted.

Uses.—Fugacious, indirect, cardio-respiratory stimulant; local irritant and antacid.

Ammoniæ Aqua, Fortior (28 per cent. by weight of NH_3).

Adult Dosage.—Min., ♏ii; av., v; max., x.

Ammoniæ Linimentum (Aqua ammoniæ 35, cottonseed oil 57, alcohol 5, oleic acid 3).

Uses.—Rubefacient; counter-irritant.

Ammoniæ Spiritus Aromaticus (contains ammon. carbonate, aq. ammoniæ, oils of lemon, lavender and nutmeg, alcohol and water).

Dosage.—6 months, gtt. iii; 18 months, gtt. iii–v; 3 years, gtt. v; 5 years, gtt. v–xx. Adult, min., ℥xv; av., xxx; max., lx.

Method of Administration.—℞ Spiritus ammoniæ aromatici, ʒi.

Sig.—One-half to one teaspoonful in half a tumbler of water, every one to two hours. A moderate dose may be repeated in fifteen to thirty minutes.

Uses.—Transient cardio-respiratory stimulant; stimulating expectorant; carminative.

Ammoniated Mercury Ointment (Unguentum Hydrargyri Ammoniati, $HgNH_2Cl$, 1 to 10 per cent.)

Uses.—Antiseptic emollient.

Ammonii Acetatis Liquor (prepare fresh by neutralizing dilute acetic acid with ammonium carbonate, forming a solution of $(CH_3COO)NH_4$, about 7 per cent.).

Dosage.—18 months, ʒss–i; 3 years, ʒi; 5 years, ʒii. Adult, min., ʒii; av., iv; max., ʒi.

Method of Administration.—℞ Liquoris ammonii acetatis, ʒiv.

Sig.—A tablespoonful in half a glass of effervescent water, every two to three to four hours.

Physiologic Action and Uses.—Diaphoretic; diuretic; stimulating expectorant.

Ammonii Benzoas, $C_6H_5COONH_4$ (soluble in 10 of water; 35 of alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii; 5 years, gr. iii–v. Adult, min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Ammonii benzoatis, ʒii ℈ii; aquæ, ʒii.

M. Sig.—ʒi–ii in water, three or four times daily.

Uses.—Urinary acidifier and antiseptic; diuretic; intestinal antiseptic.

Ammonii Bromidum, NH_4Br (soluble in 1.5 of water).

Dosage.—6 months, gr. i–iii; 18 months, gr. ii–iv; 3 years, gr. iii–v; 5 years, gr. v–viii. Adult, min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Ammonii bromidi, ʒii ℈ii; aquæ, ʒii.

M. Sig.—ʒi–ii, in a wineglass of water, two to four times daily.

Uses.—Nervous sedative; cerebral depressant; anaphrodisiac; diminishes central reflex hyperexcitability.

Toxic Action.—Bromism is manifested by palatal and pharyngeal anæsthesia, with the absence of gagging on mechanical irritation, by sexual impotence, diminished reflexes, nervous and muscular depression, apathy, weakening of memory, pallor, lowered arterial tension and temperature, muddy complexion, acne, coated tongue, fetor oris, indigestion, emaciation, drowsiness, respiratory catarrh, rapid feeble heart.

Ammonii Carbonas (soluble in 4 of water).

Dosage.—6 months, gr. ¼–½; 18 months, gr. ss–i; 3 years, gr. i; 5 years, gr. i–ii. Adult, min., gr. iii; av., v; max., x.

Method of Administration.—℞ Ammonii carbonatis, ʒi ℈i; syrupi acaciæ, ʒii.

M. Sig.—One dram in effervescing water or milk every two to four hours.

Physiologic Action and Uses.—Stimulating expectorant; diffusible stimulant. It is probably excreted in part in the bronchial mucous membrane, where it liquefies mucus by its alkalinity, and stimulates ciliary movements.

Ammonii Chloridum: NH_4Cl (soluble in 2.6 of water).

Dosage.—6 months, gr. ¼; 18 months, gr. ¼–½; 3 years, gr. i; 5 years, gr. i–ii. Adult, min., gr. v; av., viiss; max., xx.

Method of Administration.—℞ Ammonii chloridi, ʒii ℈ii (gr. v per dram); syrupi acidi citrici, ʒii; aquæ, q.s. ad. ʒiv.

M. Sig.—One or two drams in water every two to three hours. It may be given up to 75 grains a day. The citric acid is added to modify the taste. It should be diminished for children, and followed by a peppermint or wintergreen lozenge (*"Useful Drugs" of the A. M A.*).

Uses.—Stimulating, liquefying expectorant; cholagogue.

Ammonii Chloridi, Trochisci (gr. iss).

Adult Dosage.—Min., 1; max., 10.

Method of Administration.—One to ten troches, t.i.d., or every two or three hours.

Uses.—Stimulating, liquefying expectorant; cholagogue.

Ammonii Hippuras.

Adult Dosage.—Min., gr. iv; max., xv.

Method of Administration.—℞ Ammonii hippuratis, gr. x, capsulæ 24.

Sig.—One, t.i.d.

Physiologic Action and Uses.—Solvent of urates.

Ammonii Iodidum: NH_4I (soluble in 0.6 of water).

Adult Dosage.—Min., gr. ii; av., v; max., x.

Method of Administration.—℞ Ammonii iodidi, ʒii; aquæ, ʒii.

M. Sig.—Drops two, well diluted, t.i.d.p.c., gradually increased.

Uses.—Expectorant; alterative; discutient.

Ammonii Sulpho-ichthyolas: $C_{28}H_{36}S_3O_6(NH_4)_2$ (Ichthyol).

Adult Dosage.—Min., gr. i; av., v; max., x.

Method of Administration.—℞ Ichthyoli, gr. x, capsulæ 24.

Sig.—One t.i.d., up to ʒiss daily.

Uses.—Antiseptic; antiphlogistic; analgesic; alterative.

Ammonii Tartras (neutral).

Method of Administration.—Ten per cent. solution used to bathe the eye for the purpose of clearing the cornea of opacities due to the deposition of calcium carbonate following lime burns. (Zur Nedden.)

Ammonii Valeras, $NH_4C_5H_9O_2$ (soluble in 0.3 of water, and 0.6 of alcohol).

Adult Dosage.—Min., gr. i; av., viiss; max., x.

Method of Administration.—℞ Ammonii valeratis, ʒii ℈ii; aquæ, ʒii.

M. Sig.—One dram, t.i.d., or every two to four hours.

Uses.—Nervous sedative.

Amygdalæ Amaræ, Aqua (oil of bitter almonds in water, 1 : 1000).

Adult Dosage.—Min., ʒi; av., ii; max., iv.

Uses.—Flavoring agent.

Amygdalæ Amaræ, Oleum; Oil of Bitter Almond (yields benzaldehyde, about 85 per cent., and hydrocyanic acid, about 3 per cent.).

Adult Dosage.—Min., ℥¼; av., ½; max., i.

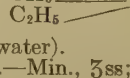
Uses.—Flavoring agent; sedative.

Amygdalæ Expressum vel Dulcis, Oleum; Oil of Sweet Almond.

Adult Dosage.—Min., ʒi; av., ʒi; max., ʒiss.

Uses.—Emollient; nutritive; laxative.

Amylenum Hydratum (dimethyl-ethyl-carbinol)



(soluble in 8 of water).

Adult Dosage.—Min., ʒss; av., i; max., iss.

Method of Administration.—℞ Amyleni hydrati, ʒi.

Sig.—One teaspoonful dissolved in three tablespoonfuls of warm water or milk at bedtime.

Physiologic Action and Uses.—Nervous sedative; hypnotic; acts in fifteen to twenty minutes.

Amyli Glyceritum (starch 10, water 10, glycerine 80, triturated and heated to a jelly).

Uses.—Emollient; vehicle.

Amylis Nitris, $C_5H_{11}NO_2$.

Adult Dosage.—Min., ♏ii; av., iii; max., v.

Method of Administration.—℞ Amylis nitritis, ♏iii–v.

Dispense in perles, no. 12.

Sig.—Break a perle in the handkerchief and inhale as required.

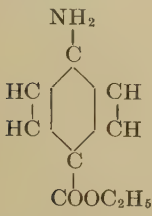
Physiologic Action and Uses.—Vasodilator, acting both centrally and peripherally, depressing the tonus of the vasomotor centre and the vessels. The action lasts but a few minutes.

Toxic Action.—Nausea, vomiting, unconsciousness, occasionally convulsions; methæmoglobinæmia, collapse, respiratory paralysis.

Amylum; Starch; Cornstarch: $C_6H_{10}O_5$.

Uses.—Vehicle; protective.

Anæsthesin (Æthylis Amino-Benzoas).



Adult Dosage.—Min., gr. v; max., viii.

Method of Administration.—℞ Æthylis aminobenzoatis, gr. viii.

Mitte talis pulveres sive trochisci, no. 12.

Sig.—One powder or lozenge as required, for gastralgia, or about two to six a day.

It may be applied as a dusting powder, in ointment, or in suppositories.

Uses.—Local anæsthetic.

Anisi Aqua.

Adult Dosage.—Av., ʒiv.

Uses.—Flavoring agent.

Anisi Oleum.

Adult Dosage.—Min., ♏i; av., iii; max., v.

Method of Administration.—℞ Olei anisi, ʒi.

Sig.—Three drops in a teaspoonful of warm water, as required for colic and flatulence.

Uses.—Carminative; expectorant; flavor.

Anisi Pulvis.

Adult Dosage.—Min., gr. v; av., viiss; max., x.

Uses.—Carminative; expectorant; flavor.

Antidiphthericum, Serum (keep sealed in a cool, dark place); Diphtheria Antitoxin (not less than 250 antitoxic units per c.c.).

Dosage.—6 months, 1500 units; 18 months, 2000 units; 3 years, 4000 units; 5 years, 5000 units. Adult, min., 5000 units; av., 15,000 units; max., 40,000 units.

Immunizing dose, 500 units for infants, 1500 to 2000 units for children over two years; Kerley says, at least 1000 units, regardless of the age of the child. Immunity lasts about three weeks. Adults need not be immunized, and children only where there is overcrowding, as in institutions. See Diphtheria, Part 1.

Antifebrin. See Acetanilidum.

Antimonii et Potassii Tartras; Tartar Emetic (soluble in 12 of water).

Dosage.—6 months, gr. 1/200; 18 months, gr. 1/150; 3 years, gr. 1/100; 5 years, gr. 1/100. Adult, min., gr. 1/16; av., 1/10; max., 1/4.

Method of Administration.—℞ Antimonii et potassii tartratis, gr. ½; syrupi rubi idæi, ʒi.

M. Sig.—One dram every hour.

℞ Antimonii et potassii tartratis, gr. 1/10.

Mitte talis tabellæ, no. 8.

Sig.—Tablet in water every three or four hours.

Uses.—Stimulating, nauseant expectorant; diaphoretic.

Toxic Action.—Nausea and vomiting, prostration, fall of temperature, cardio-vascular depression; sweating, salivation, cramps in the limbs, cyanosis, delirium, exfoliative enteritis, suppression of urine, paralyses, convulsions, collapse.

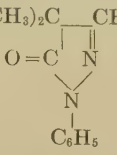
Antimonii Vinum (about 2 grains of tartar emetic to the ounce).

Adult Dosage.—Min., ♏v; av., xv; max., xx.

Method of Administration.—Employ doses of three minims as an expectorant.

Antiphlogistine. See Cataplasma Kaolini.

Antipyrina; Phenyl-dimethyl-pyrazolon:



(soluble in 1 of water, and 1.3 of alcohol).

Dosage.—6 months, gr. ss; 18 months, gr. i-iss; 3 years, gr. ii; 5 years, gr. ii–iii. Adult, min., gr. v; av., x; max., xv; no more than gr. iv under 15 years.

Method of Administration.—℞ Antipyrinæ, gr. xl; sodii bicarbonatis, gr. xx; aquæ, ʒi.

M. Sig.—One dram three or four times a day.

℞ Antipyrinæ, gr. v, pulveres 4.

Sig.—One powder, repeated every hour or two until effectual.

According to *Useful Drugs of the A. M. A.*, it should be given with even greater caution than acetanilid and acetphenetidin.

Physiologic Action and Uses.—Analgesic; nervous sedative; antipyretic; local hæmostatic in 15 per cent. solution; local anæsthetic in 50 per cent. solution. It narcotizes the heat regulating and sensory centres of the brain, and produces cerebral and cutaneous vasodilatation.

Toxic Action.—Vertigo, faintness, tinnitus, nausea, vomiting, an exanthem, methæmoglobinæmia and methæmoglobinuria.

Antipyrinæ Salicylas; Salipyrin: $C_{11}H_{12}N_2O.C_6H_4OH.COOH$ (soluble in 200 of water; readily soluble in alcohol).

Adult Dosage.—Min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Antipyrinæ salicylatis, gr.v–x, capsulæ vel tabellæ vel pulveres no. 24.

Sig.—One, three or four times daily; or every one to two hours until ʒii have been taken. (Potter.)

Uses.—Analgesic; antirheumatic; antipyretic.

Antisepticus, Liquor (boric acid 2, benzoic acid 0.1, thymol 0.1, eucalyptol 0.025, oil of peppermint 0.05, oil of gaultheria 0.025, oil of thyme 0.01, alcohol 25, purified talc 2, water to 100).

Adult Dosage.—Min. ʒss; av. i; max. ii.

Method of Administration.—℞ Liquoris antiseptici, ʒii.

Sig.—One teaspoonful t.i.d.

Uses.—Local and intestinal antiseptic; aromatic mouth-wash.

Antithyroidin (serum of thyroidectomized sheep). (Merck.)

Adult Dosage.—Min., ♏x; max., lxxx.

Method of Administration.—℞ Seri antithyroidei (Merck), ʒii.

Sig.—♏x, by mouth, gradually increased to a maximum of 80 ♏, t.i.d.

Uses.—Used in hyperthyroidism.

Antitoxin. See Sera.

Antivenene (Polyvalent or specific). Rattlesnake and moccasin antivenenes are obtainable from the Rockefeller Institute in New York; cobra and daboia antivenenes in India, notechis antivenene in Australia, and lachesis antivenene in Brazil and Japan. (Blumer.)

Adult Dosage.—Min., 50 c.c.; max., 100 c.c.

Method of Administration.—In serious cases, intravenously, if possible, otherwise intramuscularly. Use a polyvalent serum if a specific serum is not obtainable.

Uses.—Used in snake poisoning, *q.v.* in Part 1.

Apiolum Crystallisatum (Parsley Camphor: 2,5-dimethoxy-3, 4-methendioxy-1^2 propenylbenzene, $CH_2 : CH.CH_2.C_6H(OCH_3)_2 : O_2 : CH_2CH$.

Adult Dosage.—Min., gr. ii; av., v; max., x.

Method of Administration.—℞ Apioli, gr. v; capsulæ no. 30.

Sig.—Capsule, two or three times a day, p.c., for one week before and also during the period.

Uses.—Emmenagogue.

Toxic Action.—Headache, tinnitus, giddiness, cerebral excitation, narcosis.

Apocyni, Fluidextractum.

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti apocyni, ℥i.

Sig.—Fifteen drops in water, three or four times a day.

Uses.—Laxative; diuretic; diaphoretic; expectorant; cardiac tonic.

Toxic Action.—Vomiting and purging, drowsiness.

Apocyni Tinctura.

Apomorphinæ Hydrochloridum, $C_{17}H_{17}NO_2HCl$, morphine minus a molecule of water (soluble in 50 of water and in 50 of alcohol).

Adult Dosage.—Min., gr. ⅛₀; av., ⅛₀; max., ⅕₀, as an expectorant; min., gr. ⅛₅; av., ⅛₀; max., ⅛; as an emetic.

Method of Administration.—℞ Apomorphinæ, gr. ⅛₀, tabellæ no. 10.

Sig.—One tablet, by mouth, every two to four hours, as an expectorant. Hypodermically as an emetic; not over gr. ⅛₀ to young children.

Physiologic Action and Uses.—Stimulating, nauseant expectorant; emetic. It acts upon the vomiting centre in the medulla.

Toxic Action.—Cardiac and respiratory depression, delirium, collapse, convulsions.

Aqua Ammoniæ (10 per cent. by weight of NH_3).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Aquæ ammoniæ, ℥i.

Five to thirty drops, well diluted.

Uses.—Fugacious, indirect, cardio-respiratory stimulant; local irritant and antacid.

Aqua Ammoniæ, Fortior (28 per cent. by weight of NH_3).

Adult Dosage.—Min., ♏ii; av., v; max., x.

Aqua Amygdalæ Amaræ (oil of bitter almonds in water, 1 : 1000).

Adult Dosage.—Min., ℥i; av., ii; max., iv.

Uses.—Flavoring agent.

Aqua Anisi.

Adult Dosage.—Av., ℥iv.

Uses.—Flavoring agent.

Aqua Camphoræ (camphor 8, alcohol 8, talc 15, distilled water to 1000).

Adult Dosage.—Min., ℥ii; av., iv; max., ℥ii.

Uses.—Vehicle.

Aqua Chloroformi (saturated solution).

Dosage.—6 months, ℥ss; 18 months, ℥ss-ii; 3 years, ℥ii-iii; 5 years, ℥iv. Adult, min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Aquæ chloroformi, ℥iv.

Sig.—A dose as required for colic and flatulence.

Uses.—Vehicle; carminative.

Aqua Cinnamomi (oil of cinnamon 2, talc 15, distilled water to 1000).

Adult Dosage.—Av., ℥iv+.

Uses.—Vehicle.

Aqua Colognіensis (alcohol 800, water 158, acetic ether 2, oil of bergamot 16, oil of lemon 8, oil of rosemary 8, oil of lavender flowers 4, and oil of orange flowers 4 parts).

Uses.—Perfume.

Aqua Fœniculi; Fennel Water (oil 2, distilled water 1000).

Adult Dosage.—Min., ℥i; av., iv; max., ℥i.

Uses.—Carminative.

Aqua Hamamelidis; Extractum Hamamelidis Destillatum.

Adult Dosage.—Min., ℥i; av., ii; max., iii.

Uses.—Astringent; hæmostatic.

Toxic Action.—Throbbing pain in the head.

Aqua Laurocerasi, B. P. (Cherry Laurel Water, standardized to contain 0.1 per cent. of pure HCN).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Aquæ laurocerasi, B.P., ℥i.

Sig.—One teaspoonful in water, for the relief of vomiting.

Uses.—Gastric sedative; local antipruritic.

Aqua Menthæ Piperitæ (Saturated Peppermint Water, containing 0.2 per cent. oil of peppermint).

Dosage.—6 months, ℥i; 18 months, ℥i-ii; 3 years, ℥iii; 5 years, ℥iv. Adult, min., ℥iv; max., vi.

Method of Administration.—℞ Aquæ menthæ piperitæ, ℥viii.

Sig.—Tablespoonful every two hours, for colic and flatulence, up to 5 to 6 ounces a day for an adult.

Uses.—Carminative; stimulant; vehicle.

Aqua Menthæ Viridis (Spearmint Water, containing 0.2 per cent. oil of spearmint).

Dosage.—6 months, ℥i; 18 months, ℥ii; 3 years, ℥iii; 5 years, ℥iv. Adult, min., ℥iv; max., vi.

Method of Administration.—℞ Aquæ menthæ viridis, ℥ii.

Sig.—A dose, as required, for colic and flatulence.

Uses.—Carminative; vehicle.

Aqua Pimentæ (Allspice Water). Carminative vehicle.

Aqua Rosæ (Rose Water).

Adult Dosage.—Min., ℥i; av., iv; max., ℥i.

Uses.—Perfumed vehicle.

Argenti Colloidali, Unguentum; Ung. Credé (15 per cent. collargol).

Adult Dosage.—Min., gr. xxx; av., ℥i; max., iv.

Method of Administration.—Rub very thoroughly into the skin, ℥i once to thrice daily for infants; as much as ℥iv twice daily for older children; cover with rubber tissue.

The ointment is good as long as it colors the skin black.

Uses.—Antiseptic; promotes leucocytosis and phagocytosis.

Argenti Nitras, $AgNO_3$ (soluble in 0.4 of water; in 30 of alcohol).

Adult Dosage.—Min., gr. ⅛; av., ¼; max., ½.

Method of Administration.—℞ Argenti nitratis, gr. ⅛; kaolini et petrolati, q.s.

Mitte talis pilulæ no. 24.

Sig.—A pill, t.i.d., on an empty stomach.

For colonic injection, 1 : 5000, increased to 1 : 500, 1 litre, washed out with normal saline solution.

For conjunctival instillation: 1 to 2 per cent., washed out with normal saline solution.

For urethral injection, 1 : 10,000 to 2000. For vesical injection, 1 : 10,000 to 5000.

For local caustic effect, 0.01 to 10 per cent., in distilled water.

Uses.—Gastric astringent; nerve tonic; antiseptic; caustic.

Toxic Action.—Cardiac and respiratory depression; lowered temperature; tetanic convulsions or paralysis.

Argyria results from prolonged use. It is a slate-colored pigmentation of the skin and tissues of the body due to the deposition of silver.

Argenti Nitras Fusus (Moulded Lunar Caustic).

Method of Administration.—Should be moistened before use, and held with forceps or a holder.

Uses.—Caustic and astringent.

Argenti Nitras Mitigatus (Mitigated Caustic: silver nitrate melted with twice its weight of potassium nitrate).

Use.—Caustic and astringent.

Argenti Proteinas; Protargol (slowly soluble in 2 of water; dissolve in cold water).

Method of Administration:—For instillations or injections: 0.25 to 1 per cent. solutions; 5 to 10 per cent. in chronic urethritis or cystitis.

For irrigations: 1 : 2000 to 1000.

Uses.—Antiseptic.

Argentum Colloidale; Argentum Credé; Collargolum (colloidal suspension of metallic silver).

Adult Dosage.—Min., gr. iss; av., iii; max., x.

Method of Administration.—For intravenous injections, 10 to 20 c.c. of a 2 per cent. suspension in sterile water.

For parenchymatous injections, 20 to 40 c.c. of a 0.5 to 1 per cent. glycerine solution.

For washes, 0.02 to 1 per cent. suspension.

Internally, 1 : 500 to 100, teaspoonful doses, freely with the food.

Uses.—Antiseptic; promotes leucocytosis and phagocytosis.

Argyrol (Silver Vitellin).

Method of Administration.—Five to fifty per cent. solution or ointment. Do not keep the solution over two weeks; it is best renewed daily.

Uses.—Astringent, antiseptic; less irritating than protargol.

Aristol; Thymolis Iodidum; Dithymol-di-iodid: $(C_6H_2.CH_3.C_3H_7OI)_2$.

Uses.—Antiseptic powder; less efficient than iodoform.

Aristoquin; Quininæ Carbonas: $(C_{20}H_{23}N_2O).O.CO.O(C_{20}H_{23}N_2O)$. (tasteless because insoluble in water).

Adult Dosage.—Min., gr. vii; max., xv.

Method of Administration.—℞ Aristochin., gr. vii sacchari lactis, q.s., pulveres 18.

Sig.—One powder, t.i.d., dry on the tongue.

Gr. i–v for children, according to age.

Uses.—Antimalarial.

Aromaticum, Elixir (Simple Elixir: comp. spt. of orange, 1.2, purified talc 3, syrup 37½; alcohol and distilled water to 100).

Adult Dosage.—Min., ʒi; max., ʒi+.

Uses.—Flavoring vehicle and diluent.

Arsenas, Sodii: $Na_2HAsO_4+7H_2O$ (soluble in 1.5 of water; slightly in alcohol).

Adult Dosage.—Min., gr. 1/6; av., 1/12; max., 1/8.

Method of Administration.—℞ Sodii arsenatis, gr. vii (gr. 1/11 per dose of 3 minims); aquæ, ʒiv.

M. Sig.—Three minims, in water, t.i.d.p.c.

It may be given in pill form.

Physiologic Action and Uses.—Alterative; tonic; stomachic; inhibits oxidation and stimulates anabolism; stimulates the hæmatopoietic organs.

Arsenas Sodii, Exsiccatus: Na_2HAsO_4 (soluble in 3.1 of water).

Adult Dosage.—Min., gr. 1/30; av., 1/20; max., 1/15.

Method of Administration.—℞ Sodii arsenatis exsiccati, gr. iv (gr. 1/20 per dose of 3 minims); aquæ, ʒiv.

M. Sig.—Three minims, in water, t.i.d.p.c.

Physiologic Action and Uses.—Alterative; tonic; stomachic; inhibits oxidation and stimulates anabolism; stimulates the hæmatopoietic organs.

Arseni Chloridi Liquor; Liquor Acidi Arsenosi (arsenic trioxide 1 per cent. in dilute hydrochloric acid, 5 per cent. and water).

Method of Administration.—℞ Liquoris acidi arsenosi.

Sig.—♏iii, well diluted, t.i.d.

Arseni et Hydrargyri Iodidi, Liquor; Donovan's solution.

Adult Dosage.—Min., ♏i; av., iss; max., v.

Method of Administration.—℞ Liquoris arseni et hydrargyri iodidi, ʒii.

Sig.—Two drops in water, t.i.d.p.c.

Uses.—Alterative.

Arseni Iodidum: AsI_3 (soluble in 7 of water).,

Adult Dosage.—Gr. 1/20–1/10–1/8.

Arseni Trioxidum; Acidum Arsenosum: As_2O_3. (soluble in about 100 of water; readily soluble in solutions of acids or alkalies).

Dosage.—18 months, gr. 1/200; 3 years, gr. 1/150; 5 years, gr. 1/100. Adult, Min., gr. 1/64; av., 1/30; max., 1/10.

Method of Administration.—℞ Acidi arsenosi, gr. 1/60 Mitte talis tabellæ no. 24.

Sig.—Two tablets, t.i.d., p.c. gradually increased by gr. 1/60, t.i.d.

Uses.—Stomachic; tonic; alterative; hæmatinic; antiseptic. Local escharotic.

Toxic Action.—Œdema and itching or burning of the eyelids, salivation, nausea, and vomiting, epigastric pain and soreness, diarrhœa, thirst, anorexia, burning in the mouth, belching, skin eruptions, albuminuria, odor of garlic on the breath, brownish pigmentation, hyperkeratoses of the skin, multiple neuritis, feeble and irritable heart, fatty degeneration of the viscera.

Arsenilas Sodii.—See Atoxyl.

Arsenitis Potassii, Liquor (Fowler's solution).

Dosage.—6 months, gt. ss; 18 months. gt. i; 3 years gtt. ii; 5 years, gtt. ii–v. Adult, ♏iii–vi +.

Method of Administration.—℞ Liquoris potassii arsenitis, ʒss.

Sig.—Two or three drops, well diluted in water, t.i.d., p.c., gradually increased by one drop every one, two or three days, up to ten or fifteen, or even 25 drops t.i.d., even to a child of six years. Should toxic symptoms occur, stop the drug for three or four days, and begin again with smaller doses. The maximum dose may be taken for weeks or months in the absence of toxic symptoms.

Physiologic Action and Uses.—Stomachic, tonic, alterative; inhibits oxidation and stimulates anabolism; stimulates the hæmatopoietic organs.

Toxic Action.—Œdema and itching or burning of the eyelids, conjunctival congestion, salivation, burning in the mouth, belching, odor of garlic on the breath, coated tongue, anorexia, epigastric pain and soreness, nausea, vomiting, diarrhœa, thirst, albuminuria, skin eruptions, cutaneous hyperkeratoses, brownish pigmentation of the eyes, multiple neuritis, weak heart; sometimes collapse and convulsions.

Arsenobenzol. See Salvarsan.

Arsenophenylglycin.

Uses.—Used in sleeping sickness.

Arsenosum Acidum. See Arseni Trioxidum.

Arsphenamina. See Salvarsan.

Asafœtidæ Emulsum (4 per cent. in water).

Adult Dosage. ʒii–iv–ʒi.

Method of Administration.—℞ Emulsi asafœtidæ, ℥iv.

Sig.—Two teaspoonfuls four times a day; or two tablespoonfuls in one dose.

Uses.—Antispasmodic, nerve stimulant; carminative; stimulating expectorant; tonic; laxative; diuretic; diaphoretic; emmenagogue; aphrodisiac; anthelmintic. Used as an enema in tympanites.

Toxic Action.—Nausea, vomiting, purging.

Asafœtidæ Pilulæ (asafœtida, gr. iii, soap, gr. i).

Method of Administration.—℞ Pilulæ asafœtidæ, no. 24.

Sig.—One or two pills, four times a day; or six pills in one dose.

Asafœtidæ Tinctura (20 per cent.).

Adult Dosage.—Min., ♏x; av., xxx; max., lx.

Method of Administration.—℞ Tincturæ asafœtidæ, ℥i.

Sig.—Fifteen drops in water, four times a day; or ℥i in one dose.

Aspidii Oleoresina.

Dosage.—3 years, gr. x–xv; 5 years, gr. xx-xxx. Adult, min., gr. xv; av., xxx; max., lx.

Method of Administration.—℞ Oleoresinæ aspidii, ℥i.

Shake well and div. in capsulæ 8.

Sig.—Four capsules (uncapped), with half a glass of hot water at 9 A. M., and four capsules (uncapped), with hot water at 10 A. M., preceded by thorough emptying of the bowels, and followed at 12 M. by a non-oily purge, as described under Tapeworm, Part 1.

Uses.—Anthelmintic; tenicide.

Toxic Action.—Vomiting, purging, acute abdominal pain, great weakness, spasms in the extremities, sometimes convulsions; stupor, coma, collapse; sometimes deafness and blindness, temporary or permanent (due to optic atrophy), jaundice, rarely tetany.

Aspirin; Acidum Acetylsalicylicum: $C_6H_4.O$, $(CH_3CO)COOH$, 1 : 2 (soluble in 100 of water freely in alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii–iii; 5 years, gr. iii–v. Adult, min., gr. v av., x; max., xx.

Method of Administration.—℞ Acidi acetylsalicylici, gr. v–xv.

Mitte talis capsulæ, sive pulveres in charta cerata no. 12.

Sig.—One, four or five times a day, or every three hours, until salicylism (ringing in the ear, etc.) is noted.

Uses.—Antirheumatic; antipyretic; analgesic; diaphoretic; disinfectant of the pancreatic ducts, through which it is excreted.

Toxic Action.—Symptoms of salicylate poisoning (*q.v.*).

Atophan; Acidum Phenylcinchoninicum: $C_6H_5.C_9H_5N.(COOH)$. (Insoluble in water; only slightly soluble in alcohol).

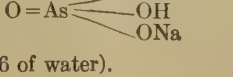
Adult Dosage.—Min., gr. viii; max., xv.

Method of Administration.—℞ Acidi phenylcinchoninici, gr. xv, pulveres 12.

Sig.—One powder suspended in a glassful of water, two or three times a day (or 8 grains 4 times a day), together with sodium or potassium bicarbonate, ℥iss–iii + daily, to prevent the deposition of free uric acid in the urinary tract.

Physiologic Action and Uses.—Diuretic; causes a markedly increased excretion of uric acid by the kidneys.

Atoxyl; Sodii Arsanilas; Sodium Arsanilate:



(soluble in 6 of water).

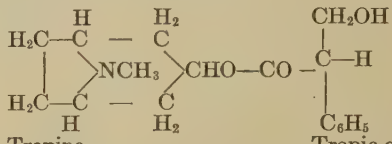
Adult Dosage.—Min., gr. ⅓; max., iii.

Method of Administration.—Administer gr. ⅓–iii, hypodermically, every other day, gradually increasing the dose, if necessary, up to gr. x, and until a total of 100 grains has been given. Do not give the drug by mouth, as it is decomposed by the acid contents of the stomach, and toxic symptoms may result.

Uses.—Antiprotozoal.

Toxic Action.—Digestive disturbances, nephritis, shock, optic atrophy, and the usual arsenic effects.

Atropina (Alkaloid, $C_{17}H_{23}NO_3$; soluble in 455 of water; in 2 of alcohol)



Tropine Tropic acid

Dosage.—6 months, gr. 1/600; 18 months, gr. 1/300; 3 years, gr. 1/250; 5 years, gr. 1/200. Adults, min., gr. 1/200; av., 1/120; max., 1/60.

Method of Administration.—Administer by mouth or hypodermically. Gradually increase the dose every two hours until the skin flushes, the throat becomes dry, and the pupils dilate, even up to gr. 1/20, t.i.d., in adults. As a mydriatic, gr. i–ii–iv ad ℥i, according to the degree of photophobia, lachrymation, and blepharospasm, one or two drops instilled into the conjunctival sac.

Physiologic Action and Uses.—Atropine paralyzes the nerve endings of the autonomic or parasympathetic system, *e.g.*, the sphincter iridis and ciliary muscle nerves, producing mydriasis and paralysis of accommodation; the chorda tympani, producing dryness of the mouth; the vagus and sacral or pelvic nerves, removing cardiac inhibition, relaxing the bronchial, gastric, intestinal, gall-bladder, uterine, and vesical musculature, and inhibiting the secretion of the skin, bronchial mucosa, and glands. It stimulates the central nervous system (respiratory, vasomotor, and cerebral centres). In small doses it stimulates the automatic Auerbach's plexuses in the stomach and intestines, which act independently of the vagus and sympathetic, and so accelerates and strengthens the contractions of the bowel. It increases intraocular tension by causing mydriasis, which closes the spaces of Fontana and so prevents the exit of fluid from the chamber of the eye.

Toxic Action.—Rapid pulse, flushing of the skin, talkative delirium, dilatation of the pupils, some elevation of temperature, dryness of the throat and skin, unconsciousness, prostration, paralysis of the voluntary muscles, vasomotor paralysis. Atropine in the eye sometimes sets up a marked conjunctivitis, with perhaps œdema of the lids.

Atropinæ Sulphas (soluble in 0.4 of water and in 5 of alcohol).

Dosage.—6 months, gr. 1/600; 18 months, gr. 1/300; 3 years, gr. 1/250; 5 years, gr. 1/200. Adult, min., gr. 1/200; av., 1/120; max., 1/60. See Atropina, above.

Aurantii Amari, Tinctura (Tincture of Bitter Orange Peel, 20 per cent.).

Adult Dosage.—Min., ℥i; max., ii.

Uses.—Flavor.

Aurantii Dulcis Tinctura; Tincture of Sweet Orange Peel, 50 per cent. in alcohol.

Adult Dosage.—Av., ℥i.

Uses.—Flavor.

Aurantii, Spiritus Compositus (oil of orange peel 20, oil of lemon 5, oil of coriander 2, oil of anise ½, alcohol to 100).

Adult Dosage.—Min., ℥i; max., ii.
Uses.—Flavor.

Aurantii, Syrupus (tincture of sweet orange peel 20 per cent., 5, magnesium carbonate 1, citric acid 5, sugar 82, water to 100).
Adult Dosage.—Min., ℥i; max., ii.
Uses.—Flavor.

Auri Chloridum ($AuCl_3$; very soluble in water).
Adult Dosage.—Min., gr. 1/60; max., 1/30.
Method of Administration.—℞ Auri chloridi, gr. ¼; aquæ destillatæ, ℥ii.
M. Sig.—One dram in water, t.i.d.
Uses.—Alterative.
Toxic Action.—Gastro-enteritis, tremors, cramps, priapism, insomnia, salivation, headache, insensibility.

Auri et Sodii Chloridum ($AuCl_3NaCl+2H_2O$; very soluble in water).
Adult Dosage.—Min., gr. 1/60; av., 1/10; max., 1/5.
Method of Administration.—℞ Auri et sodii chloridi, gr. ss; aquæ destillatæ, ℥ii.
M. Sig.—One dram in water, t.i.d.
It may also be prescribed in pill form.
Uses.—Alterative.

Bacillus Bulgaricus. Preparations are obtainable from the B. B. Culture Laboratories, Yonkers, N. Y.; Fairchild Bros. & Foster, New York; Hynson, Westcott, and Dunning, Baltimore; Schieffelin & Co., New York; H. K. Mulford Co., Philadelphia; Abbott Laboratories, Chicago; Swan-Myers Company, Indianapolis, Ind.; Vitalait Laboratory, Inc., Newton Centre, Mass.
Uses.—Lactic acid effects: intestinal antifermentation; local antiseptic.

Bacterins, see Vaccines.

Balsamum Gurjunæ (sive Dipterocarpi).
Adult Dosage.—Min., ♏x; max., ℥ii.
Method of Administration.—℞ Balsami gurjunæ, ℥i (♏xv–x per dram); liquoris calcis vel mucilaginis acaciæ, ℥iii–v.
Misce et fiat emulsum.
Sig.—One-half to two to four drams two or three times daily; together with daily inunctions of 25 to 50 per cent. of the oil in olive oil, for one to two hours at a time, into the lesions.
Uses.—Used in leprosy.

Balsamum Peruvianum (Benzyl cinnamate, $C_{16}H_{14}O_{21}$, 60 per cent., cinnamic acid 6 per cent., resins 30 per cent., benzoic acid, etc., soluble in alcohol, practically insoluble in water).
Adult Dosage.—Min., gr. x; av., xv; max., xxv.
Method of Administration.—One part to one to six parts of castor-oil, as a local antiseptic and stimulant.
Uses.—Local antiseptic and protective; parasiticide.
Toxic Action.—Gastralgia, nausea, vomiting, colicky diarrhœa, albuminuria.

Balsamum Tolutanum (contains benzoin or its derivatives; soluble in alcohol; nearly insoluble in water).
Adult Dosage.—Min., gr. v; av., xv; max., xx.
Method of Administration.—℞ Balsami tolutani, ℥iv (gr. xv per dram); mucilaginis acaciæ, ℥ii.
M. Sig.—One dram two or three times a day.
Uses.—Stimulating and disinfecting expectorant.

Barbital.—See Veronal.

Barii Sulphas: $BaSO_4$ (freed from soluble barium and other salts, for Röntgen-ray work).
Method of Administration.—For the X-ray examination of the stomach: administer, the evening before, one ounce of castor-oil. In the morning administer an ordinary portion of wheat-meal porridge containing two ounces of barium sulphate, with a little sugar and cream. No further food should be taken until after the examination, six hours later.

For the X-ray examination of the colon: inject into the rectum, from a height of from three to six feet, an enema consisting of 16 ounces of mucilage of acacia, 3 pounds of condensed milk, and 8 ounces of barium sulphate, warmed to body temperature. Make a fluoroscopic examination while the enema is passing into the rectum. From N. N. R.

Barii Sulphidum, BaS.
Method of Administration.—℞ Barii sulphidi, ℥iii; zinci oxidi; pulveris amyli, aa, ℥iiss.
M. Sig.—Add sufficient water to make a paste, and apply for about ten minutes, or until a burning sensation is felt. Then wash off.
Uses.—Depilatory.
Toxic Action.—Gastro-enteritis, salivation, thirst, dyspnœa, slow pulse, central nervous and cardiac paralysis.

Basham's Mixture: Liquor Ferri et Ammonii Acetatis (Tr. ferric chloride 4, dilute acetic acid 6, solution of ammonium acetate 50, aromatic elixir 12, glycerine 12, water to 100.)
Dosage.—3 years, ℥ss; 5 years, ℥i. Adult, min., ℥ii; av., iv; max., vi.
Method of Administration.—℞ Liquoris ferri et ammonii acetatis, ℥vi.
Sig.—One tablespoonful, well diluted in water, three or four times daily.
Uses.—Diuretic; diaphoretic; hæmatic.

Basic Orexin (Phenyl-dihydro-chinazolin).
Adult Dosage.—Min., gr. iss; max., v.
Method of Administration.—℞ Orexini, gr. **v,** tabellæ vel capsulæ no. 12.
Sig.—A tablet, t.i.d., or b.i.d., a.c., followed by a draught of warm water, milk, or beef-tea.
Uses.—Stomachic, appetizer.

Basilicon Ointment; Ceratum Resinæ (rosin 35, yellow wax 15, lard 50).
Uses.—Protective emollient.

Baths, Medicated:

1. The Alkaline Bran Bath: Sod., bicarb., ℥ii-x, bran, 1 gallon, to 30 gallons of water.

2. The Carbon Dioxide or Nauheim Bath: Sod. Chloride, 8 lbs., calc. or mag. chloride, 2 lbs., sod. bicarb., 1¾ lbs., sod. bisulphate (yielding CO_2), 2½ lbs., bath water at 90°-95° F., 40 to 45 gallons. Protect the tub against the bisulphate by means of a large rubber cloth. Add the salts to the bath in the order above given. (See under Cardiac Insufficiency in Part 1.)

3. The Electric Bath: Use either the alternating or sinusoidal current and large copper or zinc electrode, and a current strong enough to produce prickly sensations but no discomfort.

4. The Sulphur Bath: Pot. sulphide, ℥ii-iv, to 30 gallons of tepid water; or lime, ℥ss, sublimed sulphur, ℥i, distilled water, ℥x, boiled down to ℥vi and filtered,—℥ii-iv to 30 gallons of water.

Bay Rum; Spiritus Myrciæ Compositus: (oil of myrcia 16, oil of orange peel 1, oil of pimenta 1, alcohol 1220, water to 2000).
Uses.—Perfume; cutaneous stimulant.

Beck's Bismuth Paste:
Firm Bismuth Paste:
Bismuth subnitrate (pure, free from arsenic) 30 grams.
White wax, 5 grams.
Soft paraffin (melting point 120° F.), 5 grams.
Vaseline (yellow or white), 60 grams.
Softer Bismuth Paste:
Bismuth subnitrate, 1 part.
Vaseline (yellow or white), 2 parts.
One-half to one per cent. formalin may be added if desired.

The bismuth is added to the other ingredients while boiling.

Allow no water to drop into the boiling paste.

Method of Administration.—The injecting syringe (usually a glass syringe with rounded end) should be dry sterilized; and if the plunger needs lubrication it should be dipped in sterile vaseline instead of water. No preliminary irrigation of the cavity to be injected is permissible. The paste, liquefied over a water bath, is drawn into the warmed syringe. Whether for diagnostic or therapeutic purposes, the paste must penetrate into and entirely fill all pockets and recesses of the cavity injected. The cavity may have to be injected only once, or possibly every three to seven days, so as to keep it filled until it is healed. In injecting cold abscesses through a short incision, without drainage or closure of the wound, use no more than 100 grams of 10 per cent. bismuth in vaseline. If a large cavity, such as the pleural cavity in chronic empyema, is injected, remove the amount of paste in excess of 100 grams within twenty-four hours with olive-oil.

Uses.—Used in the treatment of chronic suppurative sinuses, fistulæ or abscess-cavities, excepting gall-bladder and pancreatic fistulæ and those communicating with the cranial cavity. (Beck.)

Toxic Action.—Acute nitrite poisoning: methæmoglobinæmia, cyanosis, dyspnœa, abdominal cramps, diarrhœa.

Chronic bismuth poisoning: pallor, small blue ulcerations of the gums, black discoloration beneath the tongue, nausea, headache, often diarrhœa.

Remove the paste by means of oil.

Beef Extract, see Meat Extracts.

Beef Juice, see Meat Juice.

Beef or Dry Peptonoids (a powder consisting of partially peptonized beef, milk, and wheat gluten, and containing 40 per cent. of proteins and 52 per cent. of carbohydrates. Liquid peptonoids is the same in liquid form.

Adult Dosage.—℥ii to iv.

Method of Administration.—In water, milk, wine, broths, soups, etc., or in gruels, first dissolved in water. One-half ounce represents about 65 calories.

Uses.—Nutrient, 500 gm. furnishes 2045 calories, 960 due to protein, and 1085 to carbohydrate and fat.

Belladonnæ Emplastrum (30 per cent. of ext. belladonnæ mixed with adhesive plaster.

Physiologic Action and Uses.—Local anodyne, paralyzing sensory nerve terminations.

Toxic Action.—Dryness of the mouth, throat, and skin, a red flush on the face and neck (in the "blushing area"), dilatation of the pupils, rapid pulse, nausea, husky phonation, difficulty in swallowing, mental excitement, tremor and marked motor activity, perhaps convulsions; acceleration followed by slowing of the respiration, low blood-pressure, eventual slowing of the heart, stupor, coma.

Belladonnæ Folia.

Adult Dosage.—Min., gr. ss; av., i; max., iss; gradually increased (see Atropina).

Uses.—Local anodyne, etc., see Atropina.

Belladonnæ Foliorum Extractum (gr. ¼ corresponds approximately to gr. 1/300 of mydriatic alkaloids).

Adult Dosage.—Min., gr. 1/10; av., ⅛; max., ⅜.

Method of Administration.—℞ Extracti belladonnæ, gr. ⅛, pilulæ no. 12.

Sig.—One pill, t.i.d., see Atropina.

Uses.—Local anodyne, etc., see Atropina.

Belladonnæ Foliorum, Tinctura (10 per cent.) (♏xii represents approximately gr. 1/300 of mydriatic alkaloids).

Dosage.—6 months, gt. ¼–½; 18 months, gt. i; 3 years, gtt. i–ii; 5 years, gtt. iii–v. Adult, min., ♏v; av., x; max., xxx.

Method of Administration.—℞ Tincturæ belladonnæ, ℥i.

Sig.—Ten drops in an ounce of water, every three or four hours.

Give belladonna in sufficient dosage to produce flushing of the skin, dryness of the throat, and dilatation of the pupils.

Uses.—Local anodyne, etc., see Atropina.

Belladonnæ Linimentum (camphor 5, dissolved in fl. ext. belladonna root to 100).

Uses.—Local anodyne, etc., see Atropina.

Belladonnæ Radicis Fluidextractum.

Dosage.—3 years, ♏¼; 5 years, ♏¼–½. Adult, min., ♏ss; av., i; max., ii.

Method of Administration.—℞ Fluidextracti belladonnæ, ℥i.

Sig.—One drop in water, every four hours.

Uses.—Local anodyne, etc., see Atropina.

Belladonnæ Unguentum (ext. belladonnæ 10, diluted alcohol 5, benzoated lard 65, lanolin 20).

Uses.—Local anodyne, etc., see Atropina.

Benzenum Medicinale, C_6H_6.

Adult Dosage.—Min., ♏viii; max., xv.

Method of Administration.—℞ Benzeni medicinalis, ♏viii–xv, capsulæ no. 20.

Sig.—One capsule, four times a day. Stop the drug when the leucocytes fall to 12,000, as a further drop tends to occur. Keep close tab on the blood and urine.

Uses.—Leucocyte and erythrocyte destruction.

Toxic Action.—Albuminuria, hæmaturia, giddiness, headache, abdominal pain, vomiting, purpura, anæmia, leucopenia, delirium, tonic convulsions, followed by narcosis.

Benzinum Purificatum.

Adult Dosage.—Min., gtt. v; max., x.

Method of Administration.—℞ Benzini purificati, gtt. xx, in one pint of warm water, injected high into the colon. By mouth it is given on sugar or in mucilage.

Uses.—Anthelmintic.

Benzoas Ammonii: $C_6H_5COONH_4$ (soluble in 10 of water; in 35 of alcohol).

Benzoas, Benzyli: $C_6H_5(C_6H_5COO)$.

Adult Dosage.—Of a 20 per cent. alcoholic solution, 15 to 25 drops in cold water, by mouth, three or four times a day.

Action and Uses.—The benzyl esters seem to act directly on smooth muscle, inhibiting contraction and lowering tonicity. They are said to be useful in intestinal colic and enterospasm, pylorospasm, excessive intestinal peristalsis (as in diarrhœa and dysentery), spastic constipation, biliary colic, ureteral or renal colic, vesical spasm, seminal visicular spasmodic pains, uterine colic, bronchial asthma, arterial spasm with high blood pressure (angina pectoris, etc.) hiccough, convulsions not due to organic central nervous disease. Its action is uncertain in pertussis.

Benzoas Lithii: C_6H_5COOLi (soluble in 4 of water).

Benzoas, Sodii: $Na(C_6H_5COO)$ (soluble in 1.8 of water).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii; 5 years, gr. iii–v. Adult, min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Ammonii, sodii, vel lithii benzoatis, ℥iv, gr. vii per dram; aquæ, ℥iv.

M. Sig.—Two drams in half a tumbler or more of water, every two to four hours.

Uses.—Urinary acidifier and antiseptic; diuretic: intestinal antiseptic.

Benzoicum Acidum: C_6H_5COOH (soluble in 100 of water).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii; 5 years, gr. iii–v. Adult, min., gr. v; av., viiss; max., xx.

Method of Administration.—℞ Acidi benzoici, gr. viiss, pulveres 12.

Sig.—One powder dissolved in half a tumbler of water, every two to four hours.

Uses.—Urinary acidifier and antiseptic; diuretic; intestinal antiseptic.

Benzoinatus Adeps (2 per cent. powdered benzoin)

Uses.—Ointment basis.

Benzoini Tinctura (20 per cent. benzoin).

Adult Dosage.—Min., ♏x; av., xv; max., xx.

Method of Administration.—℥ii–iv to the pint of steaming water, as an inhalant.

Physiologic Action and Uses.—Bronchial sedative and stimulating expectorant; local stimulant and protective to ulcers and fissures.

Benzoini Tinctura Composita; Friar's Balsam (benzoin 10, aloes 2, storax 8, balsam of tolu 4, alcohol to 100).

Adult Dosage.—Min., ♏x; av., xxx; max., ℥i.

Method of Administration.—℥i–℥i to the pint of steaming water, as an inhalant.

Physiologic Action and Uses.—Bronchial sedative and stimulating expectorant; local stimulant and protective to ulcers and fissures.

Benzol, see Benzenum Medicinale.

Benzosalin; Methylis Benzoyl-Salicylas: $C_6H_4O(CH_3).CO.O.(C_6H_5CO)$, 1 : 2.

Adult Dosage.—Min., gr. viiss; max., xv.

Method of Administration.—℞ Benzosalin., gr. viiss–xv, pulveres vel tabellæ no. 24.

Sig.—One powder or tablet, four times a day (gr. 45 to 60 a day).

Physiologic Action and Uses.—Decomposes in the intestine into benzoic and salicylic acids.

Benzosulphinidum; Saccharin; Glusidum: $C_6H_4SO_2.CONH$ (soluble in 290 of water, and 31 of alcohol; but much more soluble in water mixed with an equal amount of sodium bicarbonate. It is about 500 times as sweet as sugar, weight for weight).

Adult Dosage.—Gr. ss–iii–v, up to gr. xxx per diem, if required.

Ordinarily gr. ss–i is used to sweeten eight fluid ounces of food.

℞ Benzosulphinidi; sodii bicarbonatis, aa, gr. ss.
Misce. Mitte talis tabellæ no. 30.

Sig.—One tablet dissolved in each eight fluid ounces of food, as a sweetener.

Uses.—Substitute for sugar as a flavoring agent.

Benzyli Benzoas.—See Benzoas, Benzyli.

Bergamottæ Oleum.

Uses.—Flavoring agent; perfume.

Betainæ Hydrochloridum (acidol: $C_5H_{11}NO_2.HCl$; freely soluble in water).

Adult Dosage.—Av., gr. viii.

Method of Administration.—℞ Betainæ hydrochloridi, gr. viii, tabellæ no. 21.

Sig.—One tablet, freshly dissolved in water, after meals.

Physiologic Action and Uses.—Nascent HCl is slowly liberated in the aqueous solution; gr. viii corresponds to about 18 minims of dilute hydrochloric acid.

Betanaphthol, a monohydroxyphenol: $C_{10}H_7OH$ (soluble in 1000 of water, 0.8 of alcohol).

Adult Dosage.—Min., gr. iii; av., v; max., x.

Method of Administration.—℞ Betanaphthol, gr. v, pilulæ (intestinal coated), no. 21.

Sig.—One pill, t.i.d.a.c.

Externally as a 3 to 5 per cent. ointment (danger of absorption).

Uses.—Intestinal and urinary antiseptic; anthelmintic; local antiseptic and parasiticide.

Toxic Action.—Nephritis, anæmia from destruction of the red blood-cells, sometimes retinal and lenticular changes.

Betulæ, Oleum Empyreumaticum Rectificatum; Oleum Rusci Rectificatum.

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—Used in a 2 to 10 per cent. ointment.

Uses.—Local stimulant and antiseptic.

Bichloridum Hydrargyri, $HgCl_2$ (soluble in 13.5 of water, and 3.8 of alcohol).

Dosage.—6 months, gr. 1/200; 18 months, gr. 1/100; 3 years, gr. 1/100; 5 years, gr. 1/75. Adult, min., gr. 1/64; av., 1/20; max., 1/8.

Method of Administration.—℞ Hydrargyri bichloridi, gr. 1/32, tabellæ no. 60.

Sig.—One tablet, t.i.d., well diluted.

Uses.—Antiluetic; antiseptic in solution, 1 : 20,000–4000–1000. Tonic in small doses, increasing growth and weight and the formation of red blood-cells.

Toxic Action.—Vomiting, diarrhœa, frequent foul smelling and bloody stools, nervous symptoms, weakness, nephritis, anuria, salivation, gingivitis.

Bile Sálts, see Sodii Glycocholas.

Biniodidum Hydrargyri, HgI_2.

Adult Dosage.—Min., gr. 1/50; av., 1/20; max., 1/10.

Method of Administration.—℞ Hydrargyri biniodidi, gr. 1/20 tabellæ no. 60.

Sig.—One tablet, t.i.d.

Uses.—Antiluetic; alterative.

B. I. I. P.; Morrison's Paste (Iodoform, 2 ounces, bismuth subnitrate, c. p., 1 ounce, liquid paraffin, q. s. to make a soft paste or about one ounce).—The bismuth and liquid paraffin are sterilized by dry heat at 248° F. for thirty minutes. The ingredients are mixed in a sterile mortar.

Uses.—For infected wounds. After filling the wound or infected cavity with the paste, and covering with a pad, it may be left for days or weeks unless pain or constitutional disturbance occurs.

Bismuthi Subcarbonas (insoluble in water or alcohol).

Dosage.—6 months, gr. x; 18 months, gr. x–xv; 3 years, gr. x–xv; 5 years, gr. xx. Adult, min., ℥ss; max., i.

Method of Administration.—℞ Bismuthi subcarbonatis, ℥iv, (℥ss–1 per dose); syrupi acaciæ, ℥ii; aquæ cinnamomi, q.s. ad, ℥iv.

M. Sig.—Shake well, and take one or two tablespoonfuls every one to four hours.

Physiologic Action and Uses.—Intestinal astringent and antiseptic; gastric sedative (neutralizes the acid of the gastric juice with the formation of the insoluble oxychloride of bismuth which coats the stomach); local protective; used in X-ray work.

Toxic Action.—See Bismuthi Subnitras.

Bismuthi Subgallas; Dermatol (insoluble in water or alcohol).

Dosage.—6 months, gr. iii–v; 18 months, gr. v; 3 years, gr. v–x; 5 years, gr. x. Adult, min., gr. x; max., xx.

Method of Administration.—May be prescribed like the subcarbonate above. Also used locally as a protective powder and in ointment form, 10 to 20 per cent.

Uses.—Intestinal astringent and antiseptic; gastric sedative.

Local antiseptic and protective.

Bismuthi Subiodidum.

Adult Dosage.—Min., gr. iss; max., iii.

Uses.—Antiseptic dusting powder.

Bismuthi Subnitras (almost insoluble in water; insoluble in alcohol).

Dosage.—6 months, gr. v–x; 18 months, gr. x; 3 years, gr. x–xv; 5 years, gr. xx. Adult, min., ℥ss; max., i.

Method of Administration.—℞ Bismuthi subnitratis, ℥iv (℥ss–i per dose); sulphuris præcipitati, gr. viii (gr. i–ii per dose); mucilaginis acaciæ, ℥ii; aquæ, q.s. ad, ℥iv.

M. Sig.—Shake well, and take one or two tablespoonfuls every one to four hours or until the stools are blackened.

Uses.—Intestinal astringent and antiseptic (liberating nitrite); gastric sedative, not materially antacid; local protective, astringent, and antiseptic.

Toxic Action.—Blue line on the gums; headache; nausea; vomiting; stomatitis; intestinal ulceration and diarrhœa, fever, rapid pulse, nephritis, œdema of the legs.

Nitrite poisoning is manifested by vasomotor paralysis, tachycardia, and asphyxia, due to the occurrence of methæmoglobinæmia.

Bismuthi Subsalicylas (almost insoluble in water or alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii; 5 years, gr. iii–v. Adult, min., gr. x; max., xx.

Method of Administration.—℞ Bismuthi subsalicylatis, ℥iss (gr. xi per dose); syrupi acaciæ, ℥ii. Aquæ cinnamomi, q.s. ad, ℥iv.

M. Sig.—Shake well, and take one tablespoonful every two to four hours.

Uses.—Intestinal astringent and antiseptic.

Bismuth Paste, see Beck's.

Black Wash; Lotio Hydrargyri Nigra (calomel gr. xxx, in lime-water, ℥x, producing the black oxide, Hg_2O).

Uses.—Antiseptic.

Blaud's Pills (Pilulæ Ferri Carbonatis, $FeCO_3$).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years, gr. ii; 5 years, gr. ii. Adult, min., gr. v; max., vii.

Method of Administration.—℞ Pilulæ ferri carbonatis (Blaudii), pulveris recentis præparati, gr. v.

Dispense in gelatine capsules hardened with formalin (Sahli's glutoid capsules, grade ii of hardness), capsules no. 50.

Sig.—One pill, t.i.d.p.c., increased by one pill each week until four or five pills are taken t.i.d.

Uses.—Hæmatic.

Bleaching Powder, see Calx Chlorinata.

Blister, see Cantharides.

Blue Mass; Blue-Pill; Massa Hydrargyri (mercury 33, licorice 10, althæa 15, glycerine 9, honey of rose 33).

Dosage.—3 years, gr. i; 5 years, gr. i–ii. Adult, min., gr. v; av., x; max., xv.

Method of Administration.—℞ Massæ hydrargyri, gr. v–x, pilulæ no. 60.

Sig.—One pill a day.

Uses.—Cathartic; antiluetic.

Blue Ointment; Unguentum Hydrargyri Dilutum (unguentum hydrargyri 67, petrolatum 33).

Dosage.—6 months, gr. xv; 18 months, gr. xv; 3 years, gr. xxx; 5 years, ℥ss–i. Adult, min., ℥iss; av., iii; max., vi.

Method of Administration.—℞ Unguenti hydrargyri diluti, ℥i.

Mitte talis capsulæ no. 14.

Rub into a non-hairy region of the skin, each night, to the point of dryness, at least thirty minutes for one dram, rubbing a different part each night. On the seventh day take a hot sweat bath. (See Part 1: Syphilis.)

Uses.—Antiluetic; antiseptic.

Bolus Alba; Kaolinum (purified native aluminum silicate).

Adult Dosage.—Av., ℥ss.

Method of Administration.—Kaolin may be given ad libitum in an equal amount of water.

℞ Kaolini; carbonis ligni, aa.

M. Sig.—Two tablespoonfuls, once to thrice a day.

Physiologic Action and Uses.—Absorbent in diarrhœa or dysentery. It probably acts by absorbing toxines and mechanically carrying bacteria away with it.

Borax; Sodii Boras: $Na_2B_4O_7+10\ H_2O$ (soluble in 15 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. v; av., viiss; max., xxx.

Method of Administration.—As an eye-wash, 1 to 2 per cent. solution. As a mouth-wash and gargle, ℥ii ad Oi.

Uses.—Antiseptic; astringent; detergent; alkaline; antipruritic.

Toxic Action.—Gastro-enteritis, nephritis, skin eruptions, visual disturbances, fall of temperature, collapse, and a widespread fatty degeneration, dry skin, red mucous membranes.

Borici Acidi Unguentum (boric acid 10, paraffin 10, white petrolatum 80).

Uses.—Antiseptic emollient and protective.

Boricum Acidum, H_3BO_3 (soluble in 18 of water, 18 of alcohol, 4 of glycerine).

Adult Dosage.—Min., gr. v; av., x; max., xxv.

Method of Administration.—℞ Acidi borici, gr. x.

Mitte talis pulveres no. 12.

Sig.—One powder dissolved in water, three or four times daily.

Give no more than ℥i a day.

For local use, one to four drams to the pint; 4 per cent. is a saturated solution.

Uses.—Urinary acidifier and antiseptic; local antiseptic. Glycerine used as a solvent of boric acid in aqueous solution more or less destroys its antiseptic value. (Goodrich). *Toxic Act.*—See Ac. Bor.

Boroglycerini Glyceritum (boric acid 310, and glycerine 460, evaporated by heat down to 500 grams, and an equal weight of glycerine added).

Uses.—Antiseptic.

Bougard's Paste, see Part 5, Skin Diseases, under Carcinoma Cutis.

Bovinine; Bovril (partially digested meat juice).

Uses.—Nutrient.

Bran Bath, see Baths, Medicated.

Brandy; Spiritus Vini Gallici (alcoholic content 39 to 47 per cent. by weight.)

Dosage.—6 months, gtt. v–x; 18 months, gtt. x–xx; 3 years, gtt. xx–xxx; 5 years, gtt. xxx–xl. Adult, min., ℥ii; max., ℥ii.

Method of Administration.—℞ Spiritus vini gallici, ℥viii.

Sig.—A dose, diluted six to ten times in water, every one to four hours; no more than one-half to one ounce in twenty-four hours to an infant of one year or less, three to four ounces to a child of five years, no more than ten ounces to an adult.

Physiologic Action and Uses.—General stimulant in its initial effect, followed by sedation and eventually narcosis; diaphoretic dilating the cutaneous vessels; anti-pyretic; diuretic; removes inhibition; produces euphoria by blunting the feelings of discomfort; stomachic; antiseptic; local rubefacient

Bromidum Ammonii, NH_4Br (soluble in 1.5 of water).

Dosage.—6 months, gr. i–iii; 18 months, gr. ii–iv, 3 years, gr. iii–v; 5 years, gr. v–viii. Adult, min.; gr. x; av., xv; max., xl.

Method of Administration.—℞ Ammonii bromidi, ℥v ℈i (gr. x per dram); aquæ, ℥iv.

M. Sig.—One to three drams in half a tumbler

of water, milk, or an alkaline effervescent water, two to four times a day, p.c.

Physiologic Action and Uses.—Nervous sedative; cerebral depressant; anaphrodisiac: diminishes central reflex hyperexcitability.

Toxic Action.—Bromism is manifested by palatal and pharyngeal anæsthesia, with the absence of gagging on mechanical irritation, by sexual impotence, diminished reflexes, nervous and muscular depression, apathy, weakening of memory, pallor, lowered arterial tension and temperature, muddy complexion, acne, coated tongue, fetor oris, indigestion, emaciation, drowsiness, respiratory catarrh, rapid feeble heart.

Bromidum Calcii, $CaBr_2$ (soluble in 0.7 of water and 1.3 of alcohol).

Dosage.—6 months, gr. i–iii; 18 months, gr. ii–iv; 3 years, gr. iii–v; 5 years, gr. v–viii. Adult, min., gr. x; av., xv; max., lx.

Method of Administration.—℞ Calcii Bromidi, ʒv ϑi (gr. x per dram); aquæ, ʒiv.

M. Sig.—One to three drams in half a tumbler of water, milk, or an alkaline effervescent water, two to four times a day, p.c.

Physiologic Action and Uses.—Nervous sedative; cerebral depressant; anaphrodisiac: diminishes central reflex hyperexcitability.

Bromidum Potassii, KBr (soluble in 1.6 of water).

Dosage.—6 months, gr. i–iii; 18 months, gr. ii–iv; 3 years, gr. iii–v; 5 years, gr. v–viii. Adult, min., gr. x; av., xv; max., lx.

Method of Administration.—℞ Potassii bromidi, ʒv ϑi (gr. x per dram); aquæ, ʒiv.

M. Sig.—One to three drams in half a tumbler of water, milk, or an alkaline effervescent water, two to four times a day, p.c.

Physiologic Action and Uses.—Nervous sedative; cerebral depressant; anaphrodisiac: diminishes central reflex hyperexcitability.

Bromidum Sodii, NaBr (soluble in 1 of water).

Dosage.—6 months, gr. i–iii; 18 months, gr. ii–iv; 3 years, gr. iii–v; 5 years, gr. v–viii. Adult, min., gr. x; av., xv; max., lx.

Method of Administration.—℞ Sodii bromidi, ʒv ϑi (gr. x per dram); aquæ, ʒiv.

M. Sig.—One to three drams in half a tumbler of water, milk, or an alkaline effervescent water, two to four times a day, p.c.

At three months, gr. iii every two hours, for convulsions. (Holt.)

Physiologic Action and Uses.—Nervous sedative; cerebral depressant; anaphrodisiac; diminishes central reflex hyperexcitability.

Bromidum Strontii, $SrBr_2(H_2O)_6$ (soluble in 0.35 of water).

Dosage.—6 months, gr. i–iii; 18 months, gr. ii–iv; 3 years, gr. iii–v; 5 years, gr. v–viii. Adult, min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Strontii bromidi, ʒv ϑi (gr. x per dram); aquæ, ʒiv.

M. Sig.—One to three drams in half a tumbler of water, milk, or an alkaline effervescent water, two to four times a day, p.c.

Physiologic Action and Uses.—Nervous sedative; cerebral depressant; anaphrodisiac: diminishes central reflex hyperexcitability.

Bromipin (Brominized Sesame Oil, 10 per cent.).

Adult Dosage.—Min., ʒi; av., ii; max., ʒi.

Method of Administration.—℞ Bromipin, ʒii; syrupi simplicis; aquæ menthæ piperitæ, aa, ʒi.

Fiat emulsum.

Sig.—Two teaspoonfuls every four hours.

℞ Bromipin, ʒii.

Sig.—One teaspoonful in warm milk every four hours.

Physiologic Action and Uses.—Nervous sedative; cerebral depressant; anaphrodisiac; diminishes central reflex hyperexcitability.

Bromocoll Unguentum, 20 per cent. (Bromocoll = bromine compound with gelatine, containing about 20 per cent. of bromine).

Uses.—Antipruritic. (Ortner.)

Bromoformum; Tri-brom-methane: $CHBr_3$; (slightly soluble in water; miscible with alcohol; reject if colored).

Dosage.—6 months, gt. i; 18 months, gt. iss; 3 years, gtt. iii; 5 years, gtt. v. Adult, ɱiii–v.

Method of Administration.—℞ Bromoformi, ʒss.

Sig.—Five drops, in milk, or on sugar, or dissolved in almond oil, every four hours. Five to twenty minims a day, in whooping-cough.

Physiologic Action and Uses.—Nervous sedative; anaphrodisiac; diminishes reflexes.

Toxic Action.—Narcosis.

Bromum: Br (soluble in 90 of water, freely soluble in alcohol or ether).

Uses.—Irritant.

Toxic Action.—Gastritis, depression, collapse.

Bromural (2-monobrom-isovaleryl-urea: $(CH_3.CH(CH_3)CHBr.CO)HN.CO.NH_2$. easily soluble in hot water).

Adult Dosage.—Min., gr. v; max., x.

Method of Administration.—℞ Bromural, gr. v, tabellæ no. 12.

Sig.—One tablet t.i.d.; or two tablets in hot water or spirits, at bedtime, repeated if necessary during the night, after the action of the first dose has ceased.

Physiologic Action and Uses.—Nervous sedative; hypnotic, acts in twenty to thirty minutes, its effects continuing three to five hours. It is considered safe and reliable, but not active in insomnia due to pain, cough, or delirium.

Brown Mixture; Mistura Glycyrrhizæ Composita (pure extract glycyrrhizæ 3, syrup 5, acacia 3, tr. opii camph. 12, vinum antimonii 6, spiritus ætheris nitrosi 3, and water to 100).

Dosage.—6 months, gtt. xv; 18 months, gtt. xx; 3 years, gtt. xxx–xl; 5 years, gtt. xl–lx. Adult min., ʒi; av., ii; max., ʒi.

Method of Administration.—℞ Misturæ glycyrchizæ compositæ, ʒiv.

Sig.—Two to four teaspoonfuls, every two hours, until the cough is relieved.

Uses.—Sedative expectorant.

Buchu Fluidextractum.

Adult Dosage.—Min., ɱxv; av., xxx; max., lx.

Method of Administration.—℞ Fluidextracti buchu, ʒii.

Sig.—Thirty drops in a glassful of water, three or four times a day, with plenty of water in the intervals.

Uses.—Diuretic. The best of the vegetable diuretics, says Casper.

Toxic Action.—Burning sensation in the stomach, vomiting, purging, strangury.

Buchu Infusum (ʒi of the dried leaves to the pint).

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Infusi buchu, ʒviii.

Sig.—Two tablespoonfuls in a glassful of water, three or four times a day, with plenty of water in the intervals.

Uses.—Diuretic. The best of the vegetable diuretics, says Casper.

Bulgaricus Bacillus, see Bacillus Bulgaricus.

Burgundy Pitch; Pix Burgundica.

Uses.—Rubefacient; basis for plasters. It softens and becomes adhesive at the body temperature.

Burow's Solution:

℞ Liquoris alumini acetatis, ʒiii; plumbi acetatis, gr. lxxv; aquæ destillatæ, ʒiii ʒi.

M. Sig.—For local use.

Uses.—Astringent; antiseptic.

Butyl-chloral Hydras, $CH_3CHCl.CCl_2CH(OH)_2$ (soluble in 50 of water).

Adult Dosage.—Min., gr. v; max., xx.

Method of Administration.—℞ Butyl-chloral hydratis, gr. v, pilulæ no. 4.

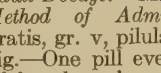
Sig.—One pill every half hour until effectual, or until four have been taken.

Uses.—Nervous sedative; hypnotic; analgesic.

Cacao-Butter; Theobromatis Oleum (melts at body temperature).

Uses.—Emollient; suppository basis.

Cacodylas Sodii; Sodium Dimethylarsenate:



(soluble in 0.5 of water, and in 2.5 of alcohol).

Adult Dosage.—Min., gr. ⅒; av., ⅛; max., i.

Method of Administration.—℞ Sodii cacodylatis, gr. xlviii; aquæ destillatæ, ʒi.

M. Sig.—Inject ♏viiss (gr. ¾), hypodermically, and increase the dose daily up to even gr. xv, unless poisonous effects occur.

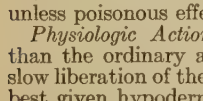
Physiologic Action and Uses.—Much less toxic than the ordinary arsenic preparations, due to the slow liberation of the arsenous acid in the body. It is best given hypodermically, because it is sometimes decomposed in the stomach.

Toxic Action.—Permanent optic atrophy.

Cadinum Oleum (Empyreumatic Oil of Juniper).

Uses.—Local cutaneous stimulant.

Caffeina; Trimethyl-xanthine (alkaloid):



(soluble in 46 of water, and 66 of alcohol; solubility in water greatly increased by the addition of sodium benzoate or salicylate).

Adult Dosage.—Min., gr. ss; av., i; max., v.

Method of Administration.—℞ Caffeinæ, gr. i, pulveres, capsulæ, vel tabellæ no. 12.

Sig.—One powder every half to one hour until relieved; may be given hypodermically.

A cup of coffee made from a tablespoonful of ground coffee contains from 1½ to 3 grains of caffeine.

Physiologic Action and Uses.—Stimulates the cerebral, medullary, and spinal centres, increases the general reflex excitability, stimulates the vasomotor, respiratory, and vagus centres in the medulla, but also acts peripherally (in the brain, kidneys, and coronary vessels) as a vasodilator, and stimulates the cardiac accelerator mechanism. It also increases the tendency to premature contractions or extrasystoles by action on the intracardiac motor mechanism. It stimulates directly cardiac and voluntary muscles, increasing their irritability and power of contraction, and lessening fatigue. It is a general neuromuscular stimulant, antineuralgic, and diuretic.

Toxic Action.—Insomnia, nervousness, sense of heaviness in the head, headache, palpitation due to extra-systoles, nausea or vomiting, lessened capacity for mental or muscular work; flashes of light before the eyes, tinnitus, muscular tremors, flatulent indigestion, vertigo, frequent urination, elevation of temperature, mental confusion, exaggerated reflexes, tetanic convulsions, cardiac dilatation.

Caffeina Citrata (50 per cent. caffeine; soluble in about 25 of water).

Dosage.—6 months, gr. ss; 18 months, gr. ss–i; 3 years, gr. i; 5 years, gr. i–ii. Adult, min., gr. i; av., v; max., x.

Method of Administration.—℞ Caffeinæ citratæ, gr. iii, pulveres no. 12.

Sig.—One powder every three hours.

Not adapted for hypodermic use.

Caffeinæ Sodio-benzoas (caffeine and sodium benzoate, aa; soluble in 1.1 of water and 30 of alcohol).

Adult Dosage.—Gr. v by mouth, gr. i–iii hypodermically, dissolved in 1 c.c. of distilled water.

Method of Administration.—℞ Caffeinæ sodio-benzoatis, vel sodio-salicylatis, gr. v, pulveres no. 12.

Sig.—One powder by mouth every four to six hours.

Caffeinæ Sodio-salicylas (caffeine and sodium salicylate, aa; soluble in 2 of water).

Adult Dosage.—Gr. v by mouth, gr. i–iii hypodermically, dissolved in 1 c.c. of distilled water.

Method of Administration.—See above.

Cajaputi Oleum.

Adult Dosage.—Min., ♏v; av., viii; max., x.

Method of Administration.—℞ Olei cajaputi, ʒi.

Sig.—♏i–iii in hot water every two hours.

Uses.—Carminative in flatulent colic.

Calamina (Native Zinc Carbonate; insoluble in water).

Uses.—A flesh-colored, protective powder.

Calamine Liniment.

Method of Administration.—℞ Calaminæ, ʒiv; zinci oxidi, ʒiv; acidi carbolici, ♏xx–xl; olei olivæ, ʒiv; liquoris calcis, ʒiv.

M. Sig.—Shake well. For local use.

Uses.—Antiseptic; antipruritic; protective.

Calamine Lotion.

Method of Administration.—℞ Calaminæ, ʒiss; zinci oxidi, ʒiii; acidi borici, ʒii; glycerini, ♏v–xv; acidi carbolici, ♏xv–ʒi; liquoris calcis, ʒii; aquæ, q.s. ad., ʒviii.

M. Sig.—Shake well. For local use.

Uses.—Antiseptic; antipruritic; protective.

Calcii Bromidum: $CaBr_2$ (soluble in 0.7 of water and 1.3 of alcohol).

Dosage.—6 months, gr. i–iii; 18 months, gr. ii–iv; 3 years, gr. iii–v; 5 years, gr. v–viii. Adult, min., gr. x; av., xv; max., lx.

Method of Administration.—℞ Calcii bromidi, ʒv ℈i (gr. x per dram); aquæ, ʒiv.

M. Sig.—One to three drams, in half a tumbler of water, milk, or an alkaline effervescent water, two to four times a day.

Physiologic Action and Uses.—Nervous sedative; cerebral depressant; anaphrodisiac; diminishes reflex hyperexcitability.

Toxic Action.—For symptoms of Bromism, see Bromidum Ammonii.

Calcii Carbonas Præcipitatus; Precipitated Chalk: $CaCO_3$ (nearly insoluble in water and in alcohol).

Adult Dosage.—Min., gr. x; av., xv; max., xlv.

Method of Administration.—℞ Calcii carbonatis præcipiti, gr. xv–lx, pulveres no. 12.

Sig.—A powder two or three times daily.

Physiologic Action and Uses.—Antacid; intestinal astringent; neutralizes acids (fatty acids, sulphuric and phosphoric acids) in the intestine, and so deprives the urine of a portion of its acid constituents, rendering it less acid, or even alkaline, and therefore favoring the solution of uratic deposits in the urinary tract.

Calcii Chloridum, $CaCl_2$ (soluble in 1.2 of water and 10 of alcohol).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years, gr. i–ii; 5 years, gr. ii. Adult, min., gr. v; av., viii; max., xv+.

Method of Administration.—℞ Calcii chloridi, ʒi (gr. xv ad ʒss); aquæ et syrupi, q.s. ad ʒii.

M. Sig.—One half to one dram, well diluted in water, four times a day (one to two drams of calcium chloride daily).

During the administration of calcium salts, avoid all acids, acid fruits, shell-fish, and egg albumen (decalcifying agents), and secure moderate catharsis.

Physiologic Action and Uses.—Hæmostatic, alterative, increases the viscosity of the blood. If continued longer than three days, it is said to diminish the coagulability of the blood. It is best given for a day or two every week. Calcium salts are muscular and nervous sedatives. Used against urticaria and serum rashes.

Toxic Action.—Lowered temperature, slow pulse, tendency to cardiac paralysis.

Calcii Glycerophosphas: $CaC_3H_7O_6P$ (soluble in 50 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. ii; av., iv; max., v.

Method of Administration.—℞ Calcii glycerophosphati, gr. v, pulveres, tabellæ, vel capsulæ no. 36.

Sig.—One, t.i.d.

Physiologic Action and Uses.—Alterative, tonic.

Calcii Hypochloris; Bleaching Powder, see Calx Chlorinata.

Calcii Hypophosphis: $Ca(PH_2O_2)_2$ (soluble in 6.8 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. v; av., viiss; max., xv.

Method of Administration.—℞ Calcii hypophosphitis, ℥ii ℈ii (gr. v ad ℥i); syrupi simplicis et aquæ, aa, ℥ii.

M. Sig.—Two drams, t.i.d.

Uses.—Alterative, tonic.

Calcii Iodidum: CaI_2.

Adult Dosage.—Min., gr. v; av., viiss; max., xx.

Uses.—Alterative; praised as a cough remedy.

Calcii Lactas: $Ca(C_3H_5O_3)_2\ 5H_2O$ (soluble in 20 of water; almost insoluble in alcohol).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years, gr. i–ii; 5 years, gr. ii. Adult, min., gr. v; av., xv; max., ℥i.

Method of Administration.—℞ Calcii lactatis, gr. xv, pulveres, in charta cerata, no. 12.

Sig.—One or two powders in water, four to six times a day.

Physiologic Action and Uses.—Hæmostatic; alterative; increases the viscosity of the blood. If continued longer than three days, it is said to diminish the coagulability of the blood. It is best given for a day or two every week. It is less irritating than the chloride, and therefore more suitable for hypodermic use. See also Calcii Chloridum.

Toxic Action.—Lowered temperature, slow pulse, tendency to cardiac paralysis.

Calcii Lactophosphatis Syrupus.

Dosage.—6 months, ♏xxx; 18 months, ♏xlv; 3 years, ℥i; 5 years, ℥i–ii. Adult, min., ℥i; av., iiss; max., iv.

Method of Administration.—℞ Syrupi calcii lactophosphatis, ℥iv.

Sig.—Two teaspoonfuls, t.i.d.

Uses.—Alterative; tonic.

Calcii Permanganas.

Adult Dosage.—Min., gr. ii; max., vi.

Method of Administration.—Gr. ii–vi ad aquam, Oi, freely, for cholera, *q.v.* in Part 1.

Uses.—Antiseptic.

Calcii et Sodii Glycerophosphati Elixir.

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Elixiris calcii et sodii glycerophosphati, ℥iv.

Sig.—Two teaspoonfuls, t.i.d.

Uses.—Alterative; tonic.

Calcii Sulphidum Crudum; Calx Sulphurata: CaS (very slightly soluble in water; insoluble in alcohol).

Dosage.—6 months, gr. 1/50; 18 months, gr. 1/20; 3 years, gr. 1/20; 5 years, gr. 1/10. Adult, min., gr. ⅛; av., ¼; max., i–ii.

Method of Administration.—℞ Calcii sulphidi, gr. ss.

Make into a pill with glucose and milk sugar, and varnish. Dispense pills no. 18.

Sig.—One pill, twice daily, p.c., increased, if desired, to three to four pills, twice a day.

Uses.—Antipustulant; local depilatory (see Barii Sulphidum).

Calcined Magnesia; Magnesii Oxidum: MgO; Light Magnesia.

Dosage.—6 months, gr. v–x; 18 months, gr. x–xx; 3 years, gr. xx–xxx; 5 years, gr. xxx–xl. Adult, min., ℥ss; max., i.

Method of Administration.—℞ Magnesii oxidi, ℥iv (gr. xv to the tablespoonful); syrupi acaciæ, ℥iv; aquæ, q.s. ad, ℥viii.

M. Sig.—Shake well and take one to two tablespoonfuls as required, for acidity, or about one to two hours after meals.

Uses.—Antacid; laxative.

Calcis Linimentum; Carron Oil (lime-water and linseed or cottonseed oil, aa).

Uses.—Bland, protective emollient.

Calcis Liquor; Lime-Water ($Ca(OH)_2$, not less than 0.14 per cent.).

Adult Dosage.—Min., ℥ss; max., i.

An excess of lime should be kept in the bottom of the container in order to preserve the strength of the solution, for lime water absorbs CO_2 from the air, with the resulting precipitation of calcium carbonate and a weakening of the solution.

Uses.—Gastric sedative; antacid; intestinal astringent.

Calcis Sulphuratæ Liquor; Vleminckx's Solution:

Method of Administration.—℞ Calcis, ℥ss; sulphuris præcipitati, ℥i; aquæ destillatæ, ℥x.

M. Boil down to six ounces and filter.

Sig.—Dilute at first with about ten parts of water, and bathe the parts for five to ten minutes. Increase the strength gradually every few nights, with the object of producing some irritation.

Uses.—Stimulating lotion; depilatory.

Calomel; Hydrargyri Chloridum Mite: HgCl.

Dosage.—6 months, gr. 1/10; 18 months, gr. 1/10; 3 years, gr. ¼; 5 years, gr. ¼. Adult, min., gr. ii; av., v; max., viii.

Method of Administration.—℞ Hydrargyri chloridi mitis, gr. i (for infants); sacchari albi, q.s.

Misce et divide in pulveres no. 10.

Sig.—One powder every half to one hour until effectual or until the stools turn green; usually no more than one grain for infants. Follow after about six hours or the next morning by a saline.

℞ Hydrargyri chloridi mitis, gr. ¼, tabellæ no. 12 (for adults).

Sig.—One tablet every fifteen minutes, or four tablets every hour (or gr. ii–viii in a single dose at bedtime, followed by a saline one hour before breakfast).

Physiologic Action and Uses.—Antiluetic; hydragogue purgative, acting (in one to twenty hours) on both the large and small bowel, by interfering with the absorption of fluids; the green color of the stools is due partly to sulphide of mercury, and not altogether to biliverdin; diuretic, acting the same as potassium citrate, *q.v.*; intestinal antiseptic; gastric sedative in small doses.

Toxic Action.—Abdominal pain; loose stools; salivation; gingivitis; malaise.

Calumbæ Fluidextractum.

Adult Dosage.—Min., ♏xv; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti calumbæ, ℥ii.

Sig.—One-half dram in water, t.i.d.a.c.

Physiologic Action and Uses.—Simple stomachic bitter; stimulates appetite and digestion through reflex stimulation of the nerves of taste; contains no tannin, and can therefore be prescribed with iron, but not ferric salts.

Calumbæ Infusum (made with cold water).

Adult Dosage.—Min., ℥ss; max., i.

Method of Administration.—℞ Infusi calumbæ, Oss.

Sig.—Tablespoonful, t.i.d.a.c.

Calumbæ Tinctura.

Adult Dosage.—Min., ℥i; av., ii; max., iv.

Method of Administration.—℞ Tincturæ calumbæ, ℥iv.

Sig.—One or two teaspoonfuls in water, t.i.d.a.c.

Calx Chlorinata; "Chloride of Lime"; Bleaching Powder (a compound of calcium chloride and hypochlorite containing not less than 30 per cent. of available chlorine; partially soluble in water and in alcohol).

Uses.—Disinfectant, especially for excreta, used liberally and left in contact at least one hour.

Calx Sulphurata; Calcii Sulphidum Crudum: CaS (very slightly soluble in water; insoluble in alcohol).

Dosage.—6 months, gr. 1/30; 18 months, gr. 1/20; 3 years, gr. 1/20; 5 years, gr. 1/10. Adult, min., gr. 1/3; av., 1/2; max., i–ii.

Method of Administration.—℞ Calcii sulphidi, gr. ss.

Make into a pill with glucose and milk sugar, and varnish. Dispense pills no. 18.

Sig.—One pill, twice daily, p.c., increased, if desired, to three or four pills twice a day.

Uses.—Antipustulant; local depilatory (see Barii Sulphidum).

Camphora.—See Camphoræ, Pulvis, below.

Camphoræ Aqua (camphor 8, alcohol 8, talc 15, distilled water to 1000).

Adult Dosage.—Min., ℥i; av., ii; max., iv.

Uses.—Vehicle; mildly carminative and expectorant.

Camphoræ Linimentum; Camphorated Oil (camphor 20, cottonseed oil 80).

Method of Administration.—This preparation, as found in drug stores, should not be used hypodermically. (See Oleum Camphorata.)

Uses.—Local rubefacient.

Camphoræ et Mentholis Trochisci.

Method of Administration.—A lozenge every two hours.

Uses.—Expectorant; diaphoretic; refrigerant; anodyne.

Camphoræ Pulvis: $C_9H_{16}CO$ (a ketone) (very slightly soluble in water, freely soluble in alcohol, ether, chloroform, and in fixed and volatile oils).

Dosage.—6 months, gr. 1/30; 18 months, gr. 1/6; 3 years, gr. 1/4; 5 years, gr. 1/4. Adult, min., gr. iss; av., ii; max., v.

Method of Administration.—For collapse, gr. i–ii–iii in ♏xv–xxx of olive-oil or ether, hypodermically or deep into the muscle, every half to one to two hours, up to 10 to 20 grains of camphor in twenty-four hours. The oily solution may be sterilized by heat.

For coryza: ℞ Camphoræ pulveris, gr. lxxx (gr. v per dram); syrupi acaciæ; aquæ, aa ℥i.

M. et fiat emulsum.

Sig.—One dram every two hours.

Physiologic Action and Uses.—Stimulates the cerebral and medullary centres, vasoconstrictor and respiratory, and the heart directly; diaphoretic; expectorant; anodyne; antiseptic.

Toxic Action.—Delirium, languor, dizziness, mental confusion, dimness of vision, drowsiness, headache, cardiovascular depression, cold skin, gastro-enteritis, unconsciousness, convulsions.

Camphoræ Spiritus (10 per cent. in alcohol).

Dosage.—6 months, gtt. iii; 18 months, gtt. v; 3 years, gtt. v–x; 5 years, gtt. x. Adult, min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Spiritus camphoræ, ℥ii.

Sig.—Fifteen drops on sugar or well diluted in water, every four to six hours. For collapse, it may be injected deep into the muscle every hour or two.

Uses.—Anodyne; carminative; diaphoretic; anticatarrhal; general stimulant.

Camphoræ Unguentum (5 to 15 per cent.).

Uses.—antipruritic.

Camphora Monobromata: $C_{10}H_{15}BrO$ (almost insoluble in water; soluble in 6.5 of alcohol).

Adult Dosage.—Gr. i–ii–v.

Method of Administration.—℞ Camphoræ monobromatæ, gr. lxxx (gr. v per dram); syrupi acaciæ; aquæ, aa ℥i.

M. et fiat emulsum.

Sig.—One-half to one dram, t.i.d. It may be prescribed in pill or capsule.

Uses.—Nervous sedative; hypnotic; anaphrodisiac.

Camphorata Oleum (camphorated oil, 10 per cent., not the liniment).

Dosage.—6 months, gtt. iii; 18 months, gtt. v; 3 years, gtt. v-x; 5 years, gtt. x. Adult, min., ♏xv; av., xxx; max., ℥i.-iiss or 10 c.c., in shock.

Method of Administration.—For collapse: sterilize by heat, and inject deep into a muscle every hour or two, or inject 0.5 c.c. every fifteen minutes for four doses, if necessary.

This is not the camphorated oil of the shops. The latter is Linimentum Camphoræ, which should not be used hypodermically.

Uses.—General stimulant; mild local rubefacient.

Camphor-Chloral (a fluid obtained by triturating together equal parts of camphor and chloral hydrate)

Uses.—Local anodyne.

Camphoricum Acidum.

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Acidi camphorici, gr. xv; mitte talis pulveres no. 12.

Sig.—One powder, dry on the tongue, t.i.d., or about two hours before the expected sweat.

Physiologic Action and Uses.—Anhidrotic; intestinal disinfectant; sedative action on the respiratory centre.

Cannabinum Tannas.

Adult Dosage.—Min., gr. v; max., x.

Method of Administration.—℞ Cannabini tannatis, gr. v, pulveres no. 4.

Sig.—One powder, repeated if necessary.

Uses.—Hypnotic.

Cannabis Indicæ Extractum (biologically assayed).

Adult Dosage.—Min., gr. 1/8; av., 1/3; max., ii.

Method of Administration.—℞ Extracti cannabis indicæ (biologically assayed) gr. 1/8, pilulæ no. 15.

Sig.—One pill, repeated every half to one hour, until effectual.

Uses.—Analgesic; hypnotic; aphrodisiac.

Toxic Action.—Sensation of enormous dimensions, dilatation of the pupils, anæsthesia, diminished reflexes, somnolence, catalepsy, coma, cardiac failure.

Cannabis Indicæ Fluidextractum (biologically assayed). When added to water the precipitate should be of a "decided olive-green color"; if a "dirty yellow-brown," the preparation is inert. (Potter.)

Adult Dosage.—Min., ♏i; av., ii; max., v.

Method of Administration.—℞ Fluidextracti cannabis indicæ (biologically assayed), ℥ss.

Sig.—One drop in water, every half to one hour, cautiously increased until effectual, even up to one dram, if necessary. (Potter.)

Uses.—Analgesic; hypnotic; aphrodisiac.

Cannabis Indicæ Tinctura (biologically assayed, see above rule).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Tincturæ cannabis indicæ (biologically assayed), ℥i.

Sig.—Five drops in water, every half to one hour, cautiously increased until effectual. (Potter.)

The dosage of cannabis indica is uncertain, because specimens of the plant vary greatly in activity.

Uses.—Analgesic; hypnotic; aphrodisiac.

Cantharidatum Collodium; Blistering Collodion (Cantharides 60, flexible collodion 85, chloroform to 100).

Method of Administration.—See below.

Uses.—Vesicant.

Toxic Action.—Nephritis (from local absorption).

Cantharidatum Emplastrum Picis (cerate of cantharides 8, Burgundy pitch to 100).

Method of Administration.—Moisten a square inch with olive oil and apply. Cover with a dossil of gauze secured by adhesive plaster. Remove in six to eight hours, or the next day, and dress with boric ointment on surgical lint.

Uses.—Vesicant.

Cantharidis Acetum.

Uses.—Rubefacient and vesicant. See Acet. Canth.

Cantharidis Ceratum; Blistering Cerate (Cantharides 32, yellow wax 18, rosin 18, lard 17, liquid petrolatum 15).

Method of Administration.—Butter a square inch of fabric with the cerate, and apply. Cover with a dossil of gauze secured by adhesive plaster. Remove in six to eight hours, or the next day, and dress with boric ointment on surgical lint.

Uses.—Rubefacient and vesicant.

Cantharidis Tinctura.

Dosage.—3 years, gt. ¼–½; 5 years, gt. ½. Adult, min., ♏i; av., v; max., x.

Method of Administration.—℞ Tincturæ cantharidis, ℥ii.

Sig.—♏i–ii in water, every two to three hours, or t.i.d.

Uses.—Diuretic; local genito-urinary irritant; aphrodisiac; corrective of albuminuria.

Toxic Action.—Gastro-enteritis, salivation, swelling of the submaxillary glands, strangury, nephritis, cystitis, hæmaturia, albuminuria, anuria, swollen genitals, priapism, abortion, convulsions, collapse, coma. Give alkalies until the urine is rendered alkaline.

Capsici Emplastrum.

Uses.—Counter-irritant.

Capsici Tinctura (cayenne pepper 10 per cent.).

Dosage.—18 months, gt. i; 3 years, gtt. ii–iii; 5 years, gtt. iii–v. Adult, min., ♏v; av., x; max., xx.

Method of Administration.—℞ Tincturæ capsici, ℥ss.

Sig.—Ten drops, well diluted in water, t.i.d., or as required.

Uses.—Stomachic; carminative; aphrodisiac; diuretic; diaphoretic.

Toxic Action.—Gastritis; narcosis.

Capsici Unguentum.

Uses.—Counter-irritant.

Capsicum; Cayenne Pepper.

Adult Dosage.—Min., gr. ss; av., i; max., ii.

Uses.—Stomachic.

Caraway Seed; Carum.

Adult Dosage.—Min., gr. x; av., xv; max., xx.

Uses.—Flavoring agent; carminative.

Carbo Ligni; Wood Charcoal.

Adult Dosage.—Min., gr. x; av., xx; max., ℥ii.

Method of Administration.—℞ Carbonis Ligni, gr. x, capsulæ vel trochisci no. 30.

Sig.—Two capsules, t.i.d. May be prescribed in suspension.

Uses.—Absorbent; deodorant; used in flatulent dyspepsia.

Carbolated Iodine (usually iodine 1, to phenol 4).

Uses.—Local antiseptic.

Carbolici Acidi Glyceritum (liquid phenol 20, glycerine 80).

Adult Dosage.—Min., ♏iii; av., v; max., x.

Method of Administration.—℞ Glyceriti acidi carbolici, ℥i.

Sig.—Fifteen minims in two tablespoonfuls of warm water, as a mouth-wash.

Physiologic Action and Uses.—Antiseptic. However, fats, vegetable oils, and glycerine (excepting lanoline and liquid petrolatum), almost prevent the germicidal action of phenol.

Carbolici Acidi Trochisci (gr. ¼) et Mentholis (gr. ⅒).

Uses.—Throat antiseptic and anodyne.

Carbolici Acidi Unguentum (phenol 3, white petrolatum 97).

Uses.—Antiseptic emollient. Phenol in liquid petrolatum is more than twice as active an antiseptic as phenol in water.

Carbolicum Acidum; Phenol: C_6H_5OH.

Adult Dosage.—Min., gr. i; max., iii.

Method of Administration.—℞ Acidi carbolici liquefacti, ℥i.

Sig.—One drop in one tablespoonful of water, every fifteen minutes for three to four hours.

Uses.—Gastric sedative and antiseptic; local antiseptic in strength of gr. v ad ℥i; disinfectant in 5 per cent. strength, or 1 : 20; local anæsthetic and caustic; antipruritic.

Toxic Action.—Gastritis, fall of temperature, fall of blood-pressure, slowing of the heart and respiration, smoky urine, collapse, stupor, coma, convulsions, paralysis.

Carbon Dioxide Bath, see Medicated Baths.

Cardamomi Tinctura (20 per cent.).

Dosage.—6 months, gtt. v; 18 months, gtt. x; 3 years, gtt. xv; 5 years, gtt. xx. Adult, Min., ℥ss; av., i; max., iss.

Method of Administration.—℞ Tincturæ cardamomi ℥ii.

Sig.—One teaspoonful in water, t.i.d.

Uses.—Stomachic; carminative.

Cardamomi Tinctura Composita (cardamom 25, cinnamon 25, caraway 12, cochineal 5, glycerine 50, diluted alcohol to 1000).

Dosage.—6 months, gtt. v; 18 months, gtt. x; 3 years, gtt. xv; 5 years, gtt. xx. Adult, min., ℥ss; av., i; max., iss.

Method of Administration.—℞ Tincturæ cardamomi compositæ, ℥ii.

Sig.—One teaspoonful in water, t.i.d.

Uses.—Stomachic; carminative.

Carlsbad Salts (sodium sulphate 50, sodium bicarbonate 6, sodium chloride 3 parts).

Adult Dosage.—Av., ℥i.

Method of Administration.—One teaspoonful in solution, one hour before breakfast.

Uses.—Laxative.

Carrel-Dakin Solution, see Dakin's solution.

Carron Oil; Linimentum Calcis (lime-water and linseed or cottonseed oil, aa).

Uses.—Bland, protective emollient.

Caryophylli Oleum; Oil of Cloves.

Adult Dosage.—Min., ♏ss; av., iii; max., iv.

Method of Administration.—℞ Olei Caryophylli, ℥i.

Sig.—One to three drops in hot water or on sugar, every two hours.

Uses.—Carminative; local anæsthetic and antiseptic.

Cascaræ Sagradæ Extractum.

Dosage.—18 months, gr. ss; 3 years, gr. i–ii; 5 years, gr. iii–v. Adult, min., gr. v; av., viii; max., x.

Method of Administration.—℞ Extracti cascaræ sagradæ, gr. v, pilulæ no. 24.

Sig.—A pill twice daily, or two pills at bedtime.

Physiologic Action and Uses.—Laxative; acts chiefly on the lower bowel; the dose can be gradually reduced without secondary constipation following.

Cascaræ Sagradæ, Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., lx.

Method of Administration.—℞ Fluidextracti cascaræ sagradæ, ℥iv.

Sig.—Ten to sixty drops in water at bedtime; or 5 to 30 drops t.i.d.a.c., gradually decreased by one drop per dose.

Physiologic Action and Uses.—Laxative; acts chiefly on the lower bowel; the dose can be gradually reduced without secondary constipation following.

Cascaræ Sagradæ, Fluidextractum, Aromaticum.

Dosage.—6 months, gtt. xv; 18 months, gtt. xxx–xlv; 3 years, ℥i; 5 years, ℥i–ii. Adult, ℥i–ii.

Method of Administration.—℞ Fluidextracti cascaræ sagradæ aromatici, ℥iv.

Sig.—One-half dram, t.i.d.a.c., gradually decreased by one drop per dose; or one to two drams at bedtime.

Uses.—Laxative, pleasant tasting.

Cassiæ Oleum; Oleum Cinnamomi.

Adult Dosage.—Min., ♏i; av., iii; max., v.

Method of Administration.—℞ Olei cinnamomi, ℥i.

Sig.—Three to five drops in hot water every two hours.

Uses.—Carminative; stimulant; uterine hæmostatic.

Toxic Action.—Local irritation; narcosis.

Castor-Oil; Oleum Ricini.

Dosage.—6 months, ℥i; 18 months, ℥ii; 3 years, ℥iii; 5 years, ℥iv. Adult, min., ℥ss; max., i.

Method of Administration.—A dose at bedtime, administered in capsules, or as follows: float the oil on wine, gruel, orange juice, soda water, or coffee, without touching the oil to the sides of the glass, then bolt the dose at one gulp, throwing it back into the throat. The mouth is first best lubricated with cream.

Physiologic Action and Uses.—Laxative; its soap acts on both the small and large intestine as a local irritant; it is effectual in two to four hours; demulcent.

Cataplasma Kaolini (glycerine 37½ parts by weight, boric acid 4½, thymol ⅒, methyl salicylate ⅛, oil of peppermint ⅒, kaolin 57¾, heated and mixed together.)

Uses.—Antiphlogistic poultice; similar to antiphlogistine.

Catechu (or Gambir) Pulvis.

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Pulveris catechu, gr. xx, pulveres no. 12.

Sig.—One powder, three or four times a day.

Uses.—Intestinal astringent (containing tannic acid).

Catechu (or Gambir) Tinctura Composita (gambir 5, cinnamon 2½, diluted alcohol to 100).

Adult Dosage.—Min., ℥ss; av., i; max., iii.

Method of Administration.—℞ Tincturæ catechu compositæ, ℥ii.

Sig.—Teaspoonful, three or four times daily.

As a gargle, ℥ss ad aquam Oi.

Uses.—Astringent (containing tannic acid).

Catechu (or Gambir) Trochisci (nearly 1 gr. of Gambir).

Uses.—Astringent (containing tannic acid).

Cera Alba; White Wax (yellow beeswax bleached; soluble in oils).

Uses.—Gives consistence to cerates and ointments.

Cera Flava; Yellow Wax (beeswax; soluble in oils).

Uses.—Gives consistence to cerates and ointments.

Ceratum Cantharidis; Blistering Cerate (Cantharides 32, yellow wax 18, resin 18, lard 17, liquid petrolatum 15).

Method of Administration.—Butter a square inch of fabric with the cerate, and apply. Cover with a dossil of gauze secured by adhesive. Remove in six to eight hours, or the next day, and dress with boric ointment on surgical lint.

Uses.—Rubefacient and vesicant.

Ceratum Plumbi Subacetatis (liquor plumbi subacetatis 20, camphor 2, wool fat 20, paraffin 20, white petrolatum 38).

Uses.—Astringent application.

Ceratum Resinæ; Basilicon Ointment (rosin 35, yellow wax 15, lard 50.)

Uses.—Protective emollient.

Ceratum simplex (white wax 30, white petrolatum 20, benzoinated lard 50).

Uses.—Protective application.

Cereal Waters: Boil one even tablespoonful of the cereal flour in twelve ounces of water for twenty minutes, or two tablespoonfuls of the grains, with a pinch of salt, in one quart of water, for six hours, the amount being kept up to one quart by the addition of boiling water. After boiling, strain through coarse muslin.

Cereo (an amylolytic ferment, manufactured by the Cereo Co., Tappan, N. Y.).

Method of Administration.—To dextrinize gruels, *i.e.*, change their starch to dextrine and maltose, add one teaspoonful of cereo to the pint of gruel after it has been cooked and cooled to a temperature a little above bloodheat.

Uses.—Amylolytic or starch-splitting ferment.

Ceridin; Cerolin (yeast fats).

Dosage.—3 years, gr. ⅜–i; 5 years, gr. iss. Adult, min., gr. iss; max., v.

Method of Administration.—℞ Cerolin, gr. iss, pilulæ no. 24.

Sig.—One to three pills, t.i.d.

Uses.—Anti-pustular; laxative.

Cerevisiæ Fermentum Compressum; Compressed Yeast.

Method of Administration.—One-half teaspoonful daily to a child of two to three years. (Holt.)

Uses.—For furunculosis; see also Ceridin. Used also to ferment milk.

Cerii Oxalas (insoluble in water, alcohol, or ether).

Dosage.—6 months, gr. ii; 18 months, gr. ii–iii; 3 years, gr. iii; 5 years, gr. iii–v. Adult, min., gr. v; max., x.

Method of Administration.—℞ Cerii oxalatis, gr. v–x; sacchari albi, q.s.

Mitte talis pulveres no. 12.

Sig.—One powder every two to three hours; or t.i.d. for several days.

Uses.—Gastric sedative.

Cereii Oxalas Effervescens.

Cetaceum; Spermaceti (a solid fat from the sperm whale).

Uses.—Ointment basis.

Chalk Powder Compound; Pulvis Cretæ Compositus (prepared chalk 30, acacia 20, sugar 50).

Adult Dosage.—Min., gr. v; av., xxx; max., lx.

Method of Administration.—℞ Pulveris cretæ compositi, ℥v (gr. xii per dram); aquæ cinnamomi, ℥x; aquæ, q.s. ad, ℥iii ℥i.

M. et fiat emulsum (=mistura cretæ).

Sig.—℥i–iv–viii every four hours.

Uses.—Antacid; astringent.

Chalk, Precipitated; Calcii Carbonas Præcipitatus: $CaCO_3$ (nearly insoluble in water and in alcohol).

Adult Dosage.—Min., gr. x; av., xv; max., xlv.

Method of Administration.—℞ Calcii carbonatis præcipitati, gr. xv–lx, pulveres no. 12.

Sig.—A powder two or three times daily.

Physiologic Action and Uses.—Antacid; intestinal astringent; neutralizes acids (fatty acids, sulphuric and phosphoric acids) in the intestine, and so deprives the urine of a portion of its acid constituents, rendering it less acid or even alkaline, and therefore favoring the solution of uratic deposits in the urinary tract.

Chalk, Prepared; Creta Præparata, $CaCO_3$ (purified native calcium carbonate).

Dosage.—6 months, gr. ii; 18 months, gr. iii; 3 years, gr. v; 5 years, gr. v-viii. Adult, min., gr. x; av., xv; max., lxxv.

Method of Administration.—℞ Cretæ præparatæ, ʒiv (gr. x to the dose); syrupi acaciæ, ʒii; aquæ cinnamomi, q.s. ad, ʒiv.

Misce et fiat emulsum.

Sig.—One teaspoonful every three to four hours.

Uses.—Antacid, astringent.

Charcoal, Wood; Carbo Ligni.

Adult Dosage.—Min., gr. x; av., xx; max., ʒii.

Method of Administration.—℞ Carbonis ligni, gr. x, capsulæ vel trochischi, no. 30.

Sig.—Two, t.i.d.

May be prescribed in suspension.

Uses.—Absorbent; deodorant; used in flatulent dyspepsia.

Charta Potassii Nitratis (paper impregnated with potassium nitrate).

Method of Administration.—Burn the paper and inhale the smoke.

Uses.—Used in asthma.

Chaulmoogræ Oleum; Oleum Gynocardiæ.

Adult Dosage.—Min., ♏v; max., x.

Method of Administration.—℞ Olei gynocardiæ, ʒii.

Sig.—Three to five drops in milk (or in capsule) t.i.d.a.c., increased by one or two drops every three to five days, up to even 150 or more drops, t.i.d., together with daily inunction of the oil, 25 to 50 per cent. in oil or lard, lasting one to two hours.

Uses.—For leprosy (*q.v.*, Part 5, Skin Diseases).

Chelsea Pensioner; Confectio Guaiaci Composita.

Adult Dosage.—Min., ʒi; max., ii.

Method of Preparation.—℞ Guaiaci, ʒss; sulphuris sublimati, ʒiii gr. xv; magnesii carbonatis, ʒss; pulveris zingiberis, gr. xv; theriacæ (treacle) vel mellis depurati, ʒiii.

Uses.—Laxative in chronic rheumatism.

Chenopodii Oleum; American Wormseed Oil (should be kept in well-stoppered, amber colored bottles, in a cool, dark place).

Dosage.—18 months gt. iss; 3 years, gtt. iii; 5 years, gtt. v. Adult, min., gtt. x; max., xv.

Method of Administration.—Cleanse the bowels the evening before, then give one drop of the oil for every year of age up to fifteen in a teaspoonful of granulated sugar, every two hours, for three doses, followed two hours later by a good dose of castor oil. Repeat this treatment weekly until no ova are found in the stools.

"Subminimal doses repeated at intervals of several days become toxic" (*Epitome of the U. S. P. and N. F.*) Each minim equals about 2½ drops.

Uses.—Anthelmintic espec. to round- and hookworm.

Toxic Action.—Cardiovascular and respiratory depression, bradycardia, fall of blood-pressure, albuminuria, somnolence, coma, paralysis.

Chiratæ Fluidextractum (contains no tannin).

Adult Dosage.—Min., ♏x; av., xv; max., xx.

Method of Administration.—℞ Fluidextracti chiratæ, ʒi.

Sig.—Fifteen drops in water, t.i.d.a.c.

Uses.—Stomachic bitter and laxative; may be administered with iron.

Chiratæ Infusum.

Adult Dosage.—Min., ʒss; max., i.

Method of Administration.—℞ Infusi chiratæ, ʒviii.

Sig.—Tablespoonful, t.i.d.a.c.

Uses.—Stomachic bitter and laxative; may be administered with iron.

Chloral Camphoratum; Camphorated Chloral, N. F. (equal parts of hydrated chloral and camphor).

Uses.—Local rubefacient and analgesic.

Chloralum Hydratum; CCl_3CHO+H_2O Trichloracetaldehyde$+H_2O$ (soluble in 0.25 of water and in 1.3 of alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i; 3 years, gr. iss; 5 years, gr. ii. Adult, min., gr. viii; av., xx; max., xxx.

Method of Administration.—℞ Chlorali hydrati, gr. lxxx (gr. xx per dose); aquæ menthæ piperitæ, ʒii.

M. Sig.—Tablespoonful, well diluted in water.

℞ Chlorali hydrati, gr. xvi (gr. ii ad ʒss); syrupi tolutani, ʒss.

M. Sig.—An appropriate dose, as required (about every four hours).

The dose per rectum is double that by mouth. For convulsions larger doses than usual are given (see Part 1).

Uses.—Nervous sedative; hypnotic; antispasmodic.

Toxic Action.—Coma; loss of reflexes, slow respiration, fall of blood-pressure and temperature due to cardiovascular depression, dilated pupils, perhaps nausea and vomiting, perhaps an exanthem, anæmia and insanity.

Chloralformamidum; Chloralamide: $CCl_3CH(OH)N(CHO)H$ (soluble in about 18.7 of water).

Adult Dosage.—Min., gr. x; av., xxx; max., lx.

Method of Administration.—℞ Chloralformamidi, gr. xv, pulveres in charta cerata, no. 2.

Sig.—One or two powders in warm water, or in one ounce of whiskey, diluted, one hour before bedtime.

Physiologic Action and Uses.—Nervous sedative; mild hypnotic; acts in sixty to ninety minutes.

Toxic Action.—Nausea, vomiting, dryness of the mouth, thirst, vertigo, restlessness, weak, rapid pulse.

Chloretone or Chlorbutanol; Acetone Chloroform; Trichlor-tertiary-butylalcohol: $CCl_3C(OH)CH_3.CH_3$.

Adult Dosage.—Min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Chloretone, gr. xv. tabellæ vel capsulæ no. 2.

Sig.—One tablet, repeated if necessary.

Uses.—Mild hypnotic; local anæsthetic (saturated solution hypodermically); gastric sedative; antiseptic

Toxic Action.—Depression; peripheral neuritis.

Chlorine Water; Liquor Chlori Compositus (prepared by adding potassium chlorate 5, hydrochloric acid 18, and distilled water 20, heating on a water bath for two or three minutes, adding distilled water to 1000, and agitating).

Adult Dosage.—Min., ♏xx; av., ʒi; max., ii; (in water, freshly prepared).

Method of Administration.—The official chlorine water, freshly made and mixed with an equal amount of water, is used as a collyrium for the eyes.

Uses.—Antiseptic.

Chloroformi Aqua (saturated solution).

Dosage.—6 months, ʒss; 18 months, ʒss–ii; 3 years, ʒii–iii; 5 years, ʒiv. Adult, min., ʒss; max., ii.

Method of Administration.—℞ Aquæ chloroformi ℥iv.

Sig.—A dose three or four times a day. For vomiting, a teaspoonful, ice-cold, every hour.

Uses.—Carminative; anodyne; antiseptic; vehicle.

Chloroformi Linimentum (chloroform 30, soap liniment 70).

Uses.—Rubefacient; anodyne.

Chloroformi Linimentum Compositum (Chloroform ℥i, oil of turpentine ℥i, tr. opii ℥ss, tr. aconite ℥ii, soap liniment ℥ii).

Uses.—Rubefacient; anodyne.

Chloroformi Spiritus (chloroform 6, alcohol 94).

Dosage.—6 months, gtt. ii–iii; 18 months, gtt. iii–v; 3 years, gtt. v–xv; 5 years, gtt. xv–xx. Adult, min., ♏x; av., xxx; max., ℥i.

Method of Administration.—℞ Spiritus chloroformi, ℥i.

Sig.—A dose, well diluted in water, as required.

Uses.—Carminative; nervous sedative.

Chloroformum; Trichlormethane, $CHCl_3$ (soluble in 210 of water; miscible with alcohol, ether, and oily substances).

Adult Dosage.—Min., ♏i; av., v; max., x.

Method of Administration.—℞ Chloroformi, ℥i.

Sig.—Five to ten drops on sugar or cracked ice, every hour, for vomiting.

Uses.—General anæsthetic; local sedative, carminative, and anodyne; antiseptic.

Toxic Action.—Chloroform poisoning: respiration stertorous or shallow, heart slow and weak, extreme pallor, pupils dilated, subsequent fatty degeneration of the liver, heart, kidneys, etc.

Chromii Trioxidum; Chromicum Acidum: CrO_3 (soluble in 0.6 of water).

Method of Administration.—To fuse the acid on the end of a probe, first warm the probe, dip it in the chromic acid crystals and then warm the part of the probe next beyond the crystals until the latter melt.

Uses.—Caustic.

Toxic Aciton.—Gastro-enteritis.

Chrysarobini Unguentum (chrysarobin 5, benzoinated lard 95).

Method of Administration.—Dilute the official ointment one to three times for average use. It stains the skin and clothing, sometimes causes an itching erythema, and should not be used on the face or scalp, for fear of being conveyed to the eyes and setting up a conjunctivitis. The skin stain may be removed with a weak solution of chlorinated lime. The clothing stain may be removed with a dilute solution of caustic soda or a solution of chlorinated soda.

Uses.—Antiseptic; antiparasitic.

Chrysarobinum, $C_{30}H_{26}O_7$ (soluble in 385 of water; rather more soluble in alcohol; soluble in 12.5 of chloroform).

Adult Dosage.—Min., gr. ⅛; av., ½; max., i.

Method of Administration.—As an ointment: 2 to 10 to 20 per cent.

Toxic Action.—Vomiting, diarrhœa, general erythema, nephritis.

Cimicifugæ Fluidextractum.

Adult Dosage.—Min., ♏xv; av., xx; max., ℥i.

Method of Administration.—℞ Fluidextracti cimicifugæ, ℥i.

Sig.—Twenty drops in water every two to four hours.

Uses.—Stomachic; aphrodisiac; expectorant; anodyne; uterine stimulant; cardiovascular tonic; diaphoretic; diuretic.

Toxic Action.—Mydriasis, vertigo, headache, nausea, and vomiting.

Cimicifugæ Tinctura.

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Tincturæ cimicifugæ, ℥ii.

Sig.—Teaspoonful in water every two to four hours.

Uses.—Stomachic; aphrodisiac; expectorant; anodyne; uterine stimulant; cardiovascular tonic; diaphoretic; diuretic.

Toxic Action.—Mydriasis, vertigo, headache, nausea, and vomiting.

Cinchonæ Fluidextractum.

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti cinchonæ, ℥i.

Sig.—Fifteen drops in water, t.i.d.a.c.

Uses.—Stomachic or bitter tonic.

Cinchonæ Tinctura (cinchona, 20 per cent.).

Dosage.—18 months, gtt. v–x; 3 years, gtt. xv; 5 years, gtt. xx–xxx. Adult, min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Tincturæ cinchonæ, ℥ii.

Sig.—Teaspoonful, t.i.d.a.c.

Uses.—Stomachic or bitter tonic.

Cinchonæ, Tinctura Composita (red cinchona 10, bitter orange peel 8, serpentaria 2, alcohol 85, water 7½, glycerine 7½.

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Tincturæ cinchonæ compositæ, ℥iv.

Sig.—One or two teaspoonfuls in water, t.i.d.a.c.

Uses.—Stomachic or bitter tonic.

Cinchophen.—See Atophan.

Cinereum Oleum; Gray Oil.

Adult Dosage.—Min., ♏ii; max., vi.

Method of Administration.—℞ Hydrargyri bidestillati, ℥iiss; alboleni, ℥iii; adipis lanæ hydrosi, ℥iss.

Prepare from sterile materials under aseptic conditions, and triturate the mercury with the lanolin for at least two hours. Dose, two to six minims, injected intramuscularly every two weeks (see Syphilis, in Part 1).

The Gray Oil or Mercurial Oil described by the N. N. R. is a 40 to 50 per cent. preparation. It is directed to be administered once or twice a week, one minim being the initial dose, and two minims the maximum. "The 'course' should not be continued beyond five or six weeks, without an intermission of equal duration." (N. N. R.)

Uses.—Antiluetic.

Cinnamomi Aqua (Ol. cin. 2, talc 15, distilled water to 1000).

Adult Dosage.—Av., ℥iv.

Method of Administration.—℞ Aquæ cinnamomi, ℥iv.

Sig.—Tablespoonful every two hours.

Uses.—Carminative; vehicle; aseptic.

Cinnamomi Oleum; Oleum Cassiæ.

Adult Dosage.—Min., ♏i; av., iii; max., v.

Method of Administration.—℞ Olei cinnamomi, ℥i.

Sig.—Three to five drops in hot water every two hours.

Uses.—Carminative; stimulant; uterine hæmostatic.

Toxic Action.—Local irritation; narcosis.

Cinnamomi Syrupus.

Uses.—Flavoring vehicle.

Cinnamomi Tinctura (cinnamon 20, glycerine 7½, alcohol and water to 100).

Adult Dosage.—Min., ♏xx; av., xxx; max., ℥i.

Method of Administration.—℞ Tincturæ cinnamomi, ℥ii.

Sig.—Half a teaspoonful in hot water every two hours.

Uses.—Carminative; stimulant.

Citarin; Sodium anhydro-methylene citrate (freely soluble in water).

Adult Dosage.—Min., gr. xv; max., xxx.

Method of Administration.—℞ Citarin, gr. xv–xxx, pulveres, in charta cerata, no. 16.

Sig.—A powder, dissolved in a glassful of water, three to four times daily.

Physiologic Action and Uses.—Antilithic: "It liberates formaldehyde in the blood and thereby forms soluble combinations with uric acid." (Potter.)

Citrici Acidi Syrupus (citric acid 1, distilled water 1, tincture of lemon peel (50 per cent.) 1, syrup to 100).

Adult Dosage.—Indefinite.

Uses.—Flavor and vehicle for salty substances, such as bromides.

Citricum Acidum: $H_3C_6H_5O_7+H_2O$ (soluble in 0.5 of water and 1.8 of alcohol).

Adult Dosage.—Min., gr. v; av., viiss; max., xv.

Method of Administration.—Acidi citrici, gr. xvii, ad aquam ℥ss is equivalent to fresh lemon-juice, ℥ss.

Uses.—Refrigerant.

Citrine Ointment; Unguentum Hydrargyri Nitratis (mercury 7, dissolved in nitric acid 17½, lard 76).

Uses.—Antiseptic.

Cloves, Oil of; Oleum Caryophylli.

Adult Dosage.—Min., ♏ss; av., iii; max., iv.

Method of Administration.—℞ Olei caryophylli, ℥i.

Sig.—One to three drops in hot water or on sugar every two hours.

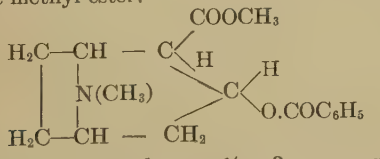
Uses.—Carminative; local anæsthetic and antiseptic.

Coagulen Ciba; Coagulen Kocher-Fonio (consists of blood platelets and glucose or lactose).

Method of Administration.—Make a 5 to 10 per cent. solution in water or normal saline solution, and boil for three to five minutes. Use as a spray or on compresses or internally, subcutaneously or intravenously (see Hemorrhage, in Part 1). It must be used on the same day it is prepared. Get a small package (1.25 gm.) because, when once opened, it should be used within three months.

Physiologic Action and Uses.—Hæmostatic. "The subcutaneous or intravenous injection is contraindicated in cases in which there is a tendency to thrombosis or embolism, as in arteriosclerosis, aneurysm, heart weakness, phlebitis, certain stages of lues, and in varicose veins." (N. N. R.)

Cocaina (alkaloid, $C_{17}H_{21}NO_4$: soluble in 600 of water, 6.5 of alcohol, 0.7 of chloroform—Benzoylecgonine methyl ester:



Dosage.—18 months, gr. 1/100; 3 years, gr. 1/50; 5 years, gr. 1/25. Adult, min., gr. ⅛; av., ½; max., i.

In suppository gr. i.

Physiologic Action and Uses.—Local anæsthetic, causing paralysis of the sensory nerve terminations and the smaller fibrils; gastric sedative; local vasoconstrictor; stimulant (followed by depression) of the cerebral, spinal, and medullary centres; stimulant of the sympathetic nerve endings of the eye, causing mydriasis and vaso-constriction of the conjunctiva and iris.

Toxic Action.—Acute poisoning: Extreme pallor, cardio-vascular and respiratory depression, tremors, somnolence, stupor, coma, convulsions, respiratory paralysis, cardiac and vasomotor paralysis, sometimes sudden death.

Cocainism: Indigestion, anorexia, insomnia, emaciation, mental enfeeblement, fetid breath, tremors, amblyopia, visual hallucinations, delirium, mental degeneration.

Cocainæ Hydrochloridum; $C_{17}H_{21}NO_4.HCl$ (soluble in 0.4 of water, 3.2 of alcohol, 12.5 of chloroform.

Dosage.—18 months, gr. 1/130; 3 years, gr. 1/50; 5 years, gr. 1/25. Adult, min., gr. ⅛; av., ½; max., i.

Method of Administration.—As a surface anæsthetic, 1 to 4 to 10 per cent. solution.

Subcutaneously, 0.01 to 0.2 to 1 per cent. solution.

In suppository, gr. i.

To keep cocaine solution indefinitely dissolve cocaine hydrochloride (the alkaloid is insoluble) in glycerine of starch in any strength (J. T. Hall).

Physiologic Action and Uses.—Local anæsthetic, causing paralysis of the sensory nerve terminations and the smaller fibrils; gastric sedative; local vasoconstrictor; stimulant (followed by depression) of the cerebral, spinal, and medullary centres; stimulant of the sympathetic nerve-endings of the eye, causing mydriasis and vaso-constriction of the conjunctiva and iris.

Toxic Action.—Acute poisoning: Extreme pallor, cardio-vascular and respiratory depression, tremors, somnolence, stupor, coma, convulsions, respiratory paralysis, cardiac and vasomotor paralysis, sometimes sudden death.

Cocainism: Indigestion, anorexia, insomnia, emaciation, mental enfeeblement, fetid breath, tremors, amblyopia, visual hallucinations, delirium, mental degeneration.

Coca-Nucis Oleum.

Cocculi Indici Tinctura (10 per cent. in diluted alcohol).

Method of Administration.—For destroying pediculi, dilute with 1, 2, or 3 parts of water.

Uses.—Parasiticide; source of picrotoxin.

Codeina (alkaloid: Methylmorphine, $C_{18}H_{21}NO_3+H_2O$; soluble in 120 of water).

Dosage.—18 months, gr. 1/20; 3 years, gr. 1/10; 5 years, gr. ⅛. Adult, min., gr. ¼; av., ½; max., i.

Method of Administration.—℞ Codeinæ, gr. ⅜ to ¾0, tabellæ no. 9.

Sig.—A tablet several times daily, or every three to four hours, as required. According to Fränkel, smaller doses than this, even when frequently repeated, are of slight efficiency and are not to be recommended. Give no more than three doses in twenty-four hours to children (Kerley).

Physiologic Action and Uses.—Nervous sedative; analgesic; hypnotic; bronchial, gastric, and intestinal sedative. Its action on the respiratory and cough centres predominates over its narcotic action.

Codeinæ Phosphas (soluble in 2.3 of water).

Dosage.—18 months, gr. 1/20; 3 years, gr. 1/10; 5 years, gr. ⅛. Adult, min., gr. ¼; av., ½; max., i.

Method of Administration.—See Codeina.

Uses.—See Codeina.

Codeinæ Sulphas; soluble in 30 of water.

Dosage.—18 months, gr. 1/20; 3 years, gr. 1/10; 5 years, gr. ⅛. Adult, min., gr. ¼; av., ½; max., i.

Method of Administration.—See Codeina.

Uses.—See Codeina.

Codliver Oil; Oleum Morrhuæ.

Dosage.—6 months, gtt. x–xv; 18 months, gtt. xv–xx; 3 years, gtt. xx–xxx; 5 years, ℥ss–i. Adult, min., ℥i; av., iv; max., vi.

Method of Administration.—℞ Olei morrhuæ, ℥ viii.

Sig.—Teaspoonful to tablespoonful, t.i.d., one-half to one hour p.c. Begin with small doses.

It may be prescribed in half dram (2 c.c.) capsules. Its digestibility is increased by the admixture of ether, ♏iv to each dram. See Codliver Oil Emulsions.

Uses.—Nutrient, contraindicated in warm weather,

high fever, gastric irritation, coated tongue, and poor digestion.

Codliver Oil Emulsions:

EMULSUM OLEI MORRHUÆ CUM HYPOPHOSPHITIBUS, U. S. P.

Dosage.—3 years, ʒss; 5 years, ʒss–i. Adult, min., ʒi; av., ii; max., vi.

Method of Administration.—℞ Olei morrhuæ, ʒviii; acaciæ, ʒii ʒss; calcii hypophosphitis, gr. lxxv; potassii hypophosphitis gr. xl; syrupi simplicis, ʒi ʒv; olei gaultheriæ, ʒss; aquæ, q.s. ad, Oi.

Misce et fiat emulsum.

Sig.—Tablespoonful (ʒii of the oil) t.i.d.p.c.

EMULSUM OLEI MORRHUÆ CUM MALTO, N. F.

Dosage.—3 years, ʒss; 5 years, ʒss–i.

Method of Administration.—℞ Olei morrhuæ, ʒxvi; mucilaginis dextrini, ʒiv ʒi; extracti malti, ʒxiiss.

Misce et fiat emulsum.

Sig.—Tablespoonful (ʒii of the oil) t.i.d.p.c.

EMULSUM OLEI MORRHUÆ CUM VITELLO.

Method of Administration.—℞ Olei morrhuæ, ʒii; vini albi, ʒiss; acidi phosphorici diluti, ʒiii; syrupi simplicis, ʒv; vitellum, i; aquæ amygdalæ amaræ, q.s. ad, ʒviii.

Misce et fiat emulsum.

Sig.—Tablespoonful (ʒi of the oil), t.i.d.p.c. (Potter.)

Colchicina (alkaloid: $C_{22}H_{25}NO_6$; soluble in 22 of water).

Adult Dosage.—Min., gr. 1/150; av., 1/120; max., 1/60.

Method of Administration.—℞ Colchicinæ, gr. 1/120 tabellæ no. 12.

Sig.—Tablet every four hours.

It may be injected hypodermically. It is the best preparation of colchicum.

Uses.—Antilithic; diuretic; diaphoretic; purgative; emetic; analgesic.

Toxic Action.—Nausea, vomiting, abdominal pain purging, enteritis, cardiovascular depression, nephritis, prostration, convulsions, collapse, ascending paralysis.

Colchici Seminis Fluidextractum.

Adult Dosage.—Min., ♏ii; av., v; max., viii.

Method of Administration.—℞ Fluidextracti colchici seminis, ʒss.

Sig.—Five drops in water every four hours until purging, nausea, or vomiting occurs.

Colchici Seminis Tinctura.

Adult Dosage.—Min., ♏xv; av., xxx; max., ʒi.

Method of Administration.—℞ Tincturæ colchici seminis, ʒii.

Sig.—Ten to thirty drops in water every two to four hours for eight to ten doses, then every four hours for three or four days until pain is relieved or toxic symptoms occur. (*q.v.* under Colchicina).

Colchici Seminis Vinum.

Adult Dosage.—Min., ♏x; av., xxx; max., ʒi.

Method of Administration.—℞ Vini colchici seminis, ʒii.

Sig.—Ten to thirty drops in water, every two to four hours for eight to ten doses, then every four hours for three or four days, until pain is relieved or toxic symptoms occur (*q.v.* under Colchicina).

Cold Cream; Unguentum aquæ rosæ (aqua rosæ fortior 19, expressed oil of almond 56, spermaceti 12½, white wax 12, sodium borate ½).

Uses.—Emollient.

Coley's Mixed Toxines of Erysipelas and Bacillus Prodigiosus.

Method of Administration.—One to eight minims hypodermically, for the treatment of malignant disease. A reaction follows the injections until tolerance becomes established.

Collargolum; Argentum Colloidale; Argentum Credé (colloidal suspension of metalic silver).

Adult Dosage.—Min., gr. iss; av., iii; max., x.

Method of Administration.—For intravenous injection, 10 to 20 c.c. of a 2 per cent. suspension in sterile water.

For parenchymatous injection, 20 to 40 c.c. of a 0.5 to 1 per cent. glycerine solution.

For washes, 0.02 to 1 per cent. suspension.

Internally, 1 : 500 to 100, teaspoonful doses, freely with the food.

Physiologic Action and Uses.—Antiseptic; promotes leucocytosis and phagocytosis.

Collodium (pyroxylin 4, ether 75, alcohol 25).

Uses.—Protective.

Collodium Acidi Salicylici (10 per cent.).

Uses.—Keratolytic.

Collodium Cantharidatum (cantharides 60, flexible collodion 85, chloroform to 100).

Uses.—Vesicant.

Collodium Flexile (collodion 92, Canada turpentine 5, castor oil 3).

Uses.—Protective.

Collodium Stypticum (ether 25, alcohol 5, tannic acid 20, collodion to 100).

Uses.—Styptic or local hæmostatic.

Collyrium Astringens Luteum or Horst's Eye-Water:

Method of Preparation.—Take of ammonium chloride 50 centigrammes and zinc sulphate 125 centigrammes, dissolve in 200 grammes of distilled water and add a solution of 40 centigrammes of camphor in 20 grammes of dilute alcohol and 10 centigrammes of saffron. Digest for twenty-four hours with frequent agitation, and filter.

Colocynthidis Extractum.

Adult Dosage.—Min., gr. ¼; av., ½; max., i.

Method of Administration.—℞ Extracti colocynthidis, gr. ¼, pulveres no. 6.

Sig.—One powder at bedtime.

Uses.—Hydragogue cathartic.

Toxic Action.—Gastroenteritis.

Colocynthidis Extractum Compositum (ext. colocynth 16, aloes 50, cardamom 6, resin of scammony 14, soap 14, alcohol 10).

Adult Dosage.—Min., gr. v; av., viiss; max., xx.

Method of Administration.—℞ Extracti colocynthidis compositi, gr. v, pilulæ no. 6.

Sig.—One or two pills at bedtime.

Uses.—Hydragogue cathartic.

Toxic Action.—Gastroenteritis.

Cologniensis Aqua (alcohol 800, water 158, acetic ether 2, oil of bergamot 16, oil of lemon 8, oil of rosemary 8, oil of lavender flowers 4, and oil of orange flowers 4 parts).

Uses.—Perfume.

Condurango Fluidextractum.

Adult Dosage.—Min., ʒss; max., i.

Method of Administration.—℞ Fluidextracti condurango, ʒiv.

Sig.—Teaspoonful in water, t.i.d.a.c.

Uses.—Bitter tonic; gastric sedative.

Condurango Pulvis.

Adult Dosage.—Av., ʒi.

Method of Administration.—℞ Pulveris condurango, ʒss; aquæ, Oi.

Boil down to half a pint.

Sig.—Tablespoonful, three or four times a day, before meals.

Uses.—Bitter tonic; gastric sedative.

Confectio Guaiaci Composita: Chelsea Pensioner.

Adult Dosage.—Min., ʒi; max., ii.

Composition.—℞ Guaiaci, ʒss; sulphuris sublimati, ʒiii, gr. xv; magnesii carbonatis, ʒss; pulveris

zingiberis, gr. xv; theriacæ (treacle) vel mellis depurati, ʒiii.

Uses.—Laxative in chronic rheumatism.

Confectio Sennæ (senna 10, cassia fistula 16, tamarind 10, prune 7, fig. 12, sugar 55½, oil of coriander ½, water to 100).

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Confectionis sennæ, ʒii.

Sig.—One or two teaspoonfuls at bedtime.

Uses.—Pleasant laxative.

Conii Fluidextractum.

Adult Dosage.—Min., ♏i; av., iii; max., x.

Method of Administration.—℞ Fluidextracti conii, ʒi.

Sig.—Three drops in water repeated as required to produce the desired effect.

Uses.—Motor depressant.

Toxic Action.—Nausea, vomiting, muscular weakness, vertigo, impaired speech, labored breathing, motor paralysis without anæsthesia or unconsciousness, loss of speech and vision, death from paralysis of the respiratory muscles.

Convallariæ Fluidextractum.

Adult Dosage.—Min., ♏ii; av., viii; max., x.

Method of Administration.—℞ Fluidextracti convallariæ ʒii.

Sig.—Eight drops in water, four times a day.

Uses.—Cardiovascular stimulant; diuretic.

Toxic Action.—Irregular, rapid heart, spasm of the respiratory muscles, slow, deep respirations.

Copaibæ Oleum; Oleoresina Copaibæ: $C_{10}H_{16}$

Adult Dosage.—Min., ♏v; av., viii; max., xv.

Method of Administration.—℞ Olei copaibæ, ♏x–xv, capsulæ no. 24.

Sig.—Capsule, four or five times a day.

Uses.—Stimulant diuretic; urinary sedative; expectorant; diaphoretic; broncho-pulmonary antiseptic and deodorizer.

Toxic Action.—Gastro-intestinal catarrh, nausea and vomiting, nephritis, erythema.

Copper, see Cuprum.

Corpus Luteum Dessiccatum; Lutein.

Adult Dosage.—Min., gr. v; max., x.

Method of Administration.—℞ Corporis lutei, gr. v–x, pulveres, tabellæ, vel capsulæ no. 36.

Sig.—Tablet, capsule, or powder, t.i.d.p.c.

Uses.—Alterative in amenorrhœa and the menopause, or "ovarian insufficiency."

Corrosive Sublimate; Hydrargyri Chloridum Corrosivum, $HgCl_2$. (Soluble in 13.5 of water, and 3.8 of alcohol.)

Dosage.—6 months, gr. 1/200; 18 months, gr. 1/100; 3 years, gr. 1/100; 5 years, gr. 1/75. Adult, min., gr. 1/64; av., 1/30; max., 1/8.

Method of Administration.—℞ Hydrargyri bichloridi, gr. 1/32 tabellæ no. 60.

Sig.—One tablet, t.i.d., well diluted.

Physiologic Action and Uses.—Antiluetic; antiseptic in solution 1 : 20,000 to 1 : 4000 to 1 : 1000. Tonic in small doses, increasing growth and weight and the formation of red blood-cells.

Toxic Action.—Vomiting, diarrhœa, frequent foul-smelling and bloody stools, nervous symptoms, weakness, nephritis, anuria, salivation, gingivitis.

Cosmoline, see Petrolatum.

Cotarninæ Hydrochloridum; Stypticin (freely soluble in water); Cotarnine is methyloxy hydrastinine: $C_{11}H_{12}NO_3(O.CH_3)$.

Adult Dosage.—Min., gr. i; max., v.

Method of Administration.—℞ Cotarninæ hydrochloridi, gr. i–iss, tabellæ, pilulæ, vel capsulæ no. 15.

Sig.—Tablet four to five times daily.

Hypodermically, gr. 1/8 to 1/2 to 3/4.

Uses.—Hæmostatic and local styptic; uterine hæmostatic and sedative.

Cotarninæ Phthalas; Styptol: $(C_{12}H_{13}O_3N)_2C_6H_4(COOH)_2$; freely soluble in water.

Adult Dosage.—Min., gr. 3/4; max., v.

Method of Administration.—℞ Cotarninæ phthalatis, gr. 3/4, tabellæ no. 30.

Sig.—Tablet three to five to nine times daily.

Hypodermically, gr. iii in ♏xxx of water.

Uses.—Hæmostatic and local styptic; uterine hæmostatic and sedative.

Coto Bark Fluidextract.

Adult Dosage.—Av., ♏v.

Uses.—Anti-diarrhœal.

Toxic Action.—Irritant to the skin and mucous membranes.

Cotton Root Bark; Gossypii Cortex.

Adult Dosage.—Min., gr. x; av., xxx; max., ʒi.

Method of Administration.—℞ Gossypii corticis, ʒiv; aquæ, Oii.

Boil down to a pint.

Sig.—A wineglassful every few hours, or t.i.d.

Uses.—Supposed emmenagogue and oxytocic.

Cotton Root Bark, Fl. Ext.; Fluidextractum Gossypii Corticis, N. F.

Adult Dosage.—Av., ♏xxx.

Method of Administration.—℞ Fluidextracti gossypii corticis, N. F., ʒii.

Sig.—♏xxx, in water, t.i.d.

Cottonseed Oil; Oleum Gossypii Seminis.

Dosage.—6 months, gtt. xv; 18 months, gtt. xv–xxx; 3 years, ʒss–i; 5 years, ʒi. Adult, min., ʒi; av., iv; max., ʒi.

Method of Administration.—℞ Olei gossypii seminis, ℥viii.

Sig.—A teaspoonful to two tablespoonfuls, t.i.d.p.c.

As a laxative, ʒii–vi twice daily.

As an enema, five to sixteen ounces high into the colon.

Uses.—Nutrient; lubricant; emollient; laxative.

Couch Grass, see Triticum.

Coumarinum.

Uses.—Perfume and flavor; used to disguise the odor of iodoform.

Cream of Tartar; Potassii Bitartras, $KHC_4H_4O_6$ (soluble in 155 of water).

Adult Dosage.—Min., gr. xx; av., xxx; max., ʒi.

Method of Administration.—Dissolve, for infants ʒi–ii, and for children of five years and adults ʒii–iv, in one or two pints of boiling water; allow to cool, flavor with sugar and lemon juice, and administer freely during the twenty-four hours.

Uses.—Diuretic; aperient; refrigerant.

Credé Argentum; Argentum Colloidale; Collargolum: colloidal suspension of metallic silver.

Adult Dosage.—Min., gr. iss; av., iii; max., x.

Method of Administration.—For intravenous injections, 10 to 20 c.c. of a 2 per cent. suspension in sterile water.

For parenchymatous injections, 20 to 40 c.c. of a 0.5 to 1 per cent. glycerine solution.

For washes, 0.02 to 1 per cent. suspension.

Internally, 1 : 500 to 100, teaspoonful doses, freely with the food.

Uses.—Antiseptic; promotes leucocytosis and phagocytosis.

Credé Unguentum; Unguentum Argenti Colloidali (15 per cent. collargol).

Adult Dosage.—Min., gr. xxx; av., ʒi; max., iv.

Method of Administration.—Rub very thoroughly into the skin, ʒi, once to thrice daily, for infants; as much as ʒiv, twice daily, for older children; cover with rubber tissue.

The ointment is good as long as it colors the skin black.

Physiologic Action and Uses.—Antiseptic; promotes leucocytosis and phagocytosis.

Creolin (an emulsion of cresols and hydrocarbons of uncertain and varying composition).

Method of Administration.—For colonic or gastric irrigation, 0.5 to 1.0 per cent. solution.

For vaginal irrigation, 2 per cent. solution.

For nasal, aural, conjunctival and vesical irrigation, 1 : 1000.

Uses.—Antiseptic.

Creosoti Carbonas; Creosotal (insoluble in water; freely soluble in alcohol).

Dosage.—6 months, gt. ss; 18 months, gtt. ii; 3 years, gtt. ii–iii; 5 years, gtt. iii–v. Adult, min., ℥v; av., xx; max., xxx.

Method of Administration.—℞ Creosoti carbonatis, ʒvi; tincturæ gentianæ compositæ, q.s. ad, ʒiii.

M. Sig.—One dram, in water, t.i.d.p.c. The dose may be gradually increased to no more than ʒiss of the carbonate per diem.

It may also be administered in milk, wine, brandy, codliver oil, or capsules.

Physiologic Action and Uses.—Pulmonary sedative expectorant and antiseptic; intestinal antiseptic; tonic. It passes the stomach unchanged, and is decomposed in the intestines; is not a gastric irritant.

Toxic Action.—Resembles phenol poisoning.

Creosoti Valeras; Eosote.

Adult Dosage.—Gr. iii+.

Method of Administration.—℞ Creosoti valeratis; gr. iii, capsulæ no. 24.

Sig.—Capsule t.i.d.p.c., gradually increased in dosage.

Physiologic Action and Uses.—Pulmonary sedative expectorant and antiseptic; intestinal antiseptic, tonic. It passes the stomach unchanged, and is decomposed in the intestines; is not a gastric irritant.

Toxic Action.—Resembles phenol poisoning.

Creosotum (chiefly guaiacol and creosol; soluble in about 150 of water; freely soluble in alcohol).

Dosage.—6 months, gt. ss; 18 months, gtt. ii; 3 years, gtt. ii–iii; 5 years, gtt. iii–v. Adult, min., ℥v; max., x.

Method of Administration.—℞ Creosoti (beechwood), ʒi; tincturæ gentianæ compositæ, ʒii; vini xerici, q.s. ad, ʒviii.

M. Sig.—One teaspoonful to three tablespoonfuls, in water, after meals.

Creosote may also be administered in capsules, milk, brandy, or codliver oil.

It may be gradually increased by one minim daily up to 15 to 30 minims daily.

For inhalation purposes: 10 drops in a pint of steaming water.

Physiologic Action and Uses. Pulmonary sedative expectorant and antiseptic; intestinal antiseptic; tonic; gastric irritant.

Toxic Action.—Resembles phenol poisoning.

Cresol (a mixture of three isomeric cresols: $C_6H_4(CH_3)OH$; soluble in 50 of water). Methyl Phenol.

Adult Dosage.—℥ss; i, ii.

Method of Administration.—One-fourth to one per cent. solution as a local antiseptic and disinfectant.

Uses.—Antiseptic and disinfectant; more actively germicidal than phenol.

Toxic Action.—Symptoms and treatment those of carbolic acid poisoning.

Cresolis Liquor Compositus (cresol 50, linseed oil 35, potassium hydroxide 8, water to 100; similar to lysol).

For mucous membranes, 1 to 2 per cent. solution.

For the skin, 1 to 5 per cent.

Uses.—Antiseptic and disinfectant. More actively germicidal than phenol.

Toxic Action.—Symptoms and treatment those of carbolic acid poisoning.

Cretæ Pulvis Compositus (prepared chalk 30, acacia 20, sugar 50).

Adult Dosage.—Min., gr. v; av., xxx; max., ℔.

Method of Administration.—℞ Pulveris cretæ compositi, ʒv (gr. xii per dram); aquæ cinnamomi, ʒx; aquæ, q.s. ad, ʒiii ʒi. (=Mistura Cretæ).

M. Sig.—ʒi–iv–viii every four hours.

Uses.—Antacid; astringent.

Creta Præparata; Prepared Chalk (purified native $CaCO_3$).

Dosage.—6 months, gr. ii; 18 months, gr. iii; 3 years, gr. v; 5 years, gr. v–viii. Adult, min., gr. x av., xv; max., lxxv.

Method of Administration.—℞ Cretæ præparatæ, ʒiv (gr. x to the dose); syrupi acaciæ, ʒii; aquæ cinnamomi, q.s. ad, ʒiv.

M. Sig.—One teaspoonful every three to four hours.

Uses.—Antacid; astringent.

Croton-chloral Hydras; Butyl-chloral Hydras $CH_3CHCl.CCl_2.CH(OH)_2$; (soluble in 50 of water).

Adult Dosage.—Min., gr. v; max., xx.

Method of Administration.—℞ Butyl-chloral hydratis, gr. v, pilulæ no. 4.

Sig.—One pill every half hour until effectual, or until four have been taken.

Uses.—Nervous sedative; hypnotic; analgesic.

Croton Oil; Oleum Tiglii.

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—Administer in four or five drops of olive oil or glycerine, or on sugar, or butter, or in a bread pill.

Physiologic Action and Uses.—Purgative, acting as a local irritant (in two to four hours), chiefly on the small bowel; local rubefacient and vesicant.

Cubebæ Oleoresina; Oleum Cubebæ.

Adult Dosage.—Min., gr. v; av., viii; max., xx.

Method of Administration.—℞ Oleoresinæ cubebæ, gr. viii, capsulæ no. 24.

Sig.—Capsule, t.i.d.p.c.

Uses.—Broncho-pulmonary antiseptic and deodorizer; stimulating diuretic; expectorant; urinary astringent, feeble antiseptic, and sedative.

Toxic Action.—Nausea; headache; hæmaturia; irritability of the neck of the bladder.

Cupri Citras (but slightly soluble in cold water).

Adult Dosage.—Min., gr. ¼; av., ½; max., i.

Method of Administration.—℞ Cupri citratis, gr. ¼–½, pilulæ no. 30.

Sig.—One pill, t.i.d., (increased, if desired to gr. i, t.i.d.).

Uses.—Antiseptic; antimycotic; astringent.

Toxic Action.—Nausea, vomiting, gastro-enteritis, heart depression, quickened respiration, fever, headache, bronchial catarrh, salivation, anæmia, emaciation.

Cupri Sulphas: $CuSO_4+5H_2O$ (soluble in 2.5 of water).

Adult Dosage.—Gr. ⅛-¼-½, in solution or in pill as an astringent; gr. v-x-xv, in solution as an emetic, or gr. v every fifteen minutes until effectual.

℞. Cupri sulphatis, gr. ¼-½, pilulæ no. 30.

Sig.—One pill t.i.d. (increased if necessary to gr. i t.i.d.) As a local antiseptic or as an astringent throat gargle use a one per cent. solution, or gr. v ad ʒi.

Physiologic Action and Uses.—Antiseptic; astringent; antimycotic; emetic (acting reflexly). Copper is only very slightly poisonous.

Curare.

Adult Dosage.—Gr. ½ hypodermically every six hours.

Uses.—To allay spasms in tetanus.

Cystogen, see Hexamethylenamina.

Dakin's Solution.—A neutral solution of sodium hypochlorite, NaClO, of 0.45 to 0.5 per cent. strength. Less than 0.4 per cent. strength is too inert; greater than 0.5 per cent. is too irritating.

Method of Preparation.—Dissolve 140 grams of dry sodium carbonate or 400 grams of the crystals (washing soda) in 10 litres of top water, and add 200 grams of bleaching powder containing 24 to 28 per cent. of "available chlorine" (see below). After shaking very thoroughly, allow to stand for half an hour, then siphon off the clear supernatant liquid and filter. To the filtrate add 40 grams of boric acid. The resulting so-called Dakin's solution is good for only one week; it should be kept in a cool place in the dark, and should be tested daily for strength and neutrality.

To test for neutrality, add a little of the solution to a trace of solid phenolphthalein suspended in water. If a red color, indicating free alkali, develops, more boric acid should be added to the Dakin's solution.

To test for strength, proceed as follows: To 10 c.c. of the solution add 5 c.c. each of 10 per cent. sodium or potassium iodide and 10 per cent. pure or glacial acetic acid in water. Iodine is thereby liberated in amount equivalent to the amount of active chlorine in the solution under test. Now determine the amount of iodine liberated by adding from a burette a decinormal sodium thiosulphate solution (24.8 grams of pure crystallized sodium thiosulphate in 1000 c.c. of water) until almost all the iodine has disappeared. Now add a few drops of starch paste (about 0.1 gram of starch boiled with 100 c.c. of water, and allowed to cool and sediment), and continue the addition of the thiosulphate until the blue color just disappears. Each cubic centimetre of thiosulphate used, represents 0.00372 gram of sodium hypochlorite. Multiply the latter figure by the number of cubic centimetres used, and this by 10, and the result is the percentage of sodium hypochlorite in the solution tested. (Dakin and Dunham).

To determine the "available chlorine" content of bleaching powder, proceed as follows: Triturate 10 grams of the powder in a mortar with successive small quantities of water, transfer completely to a litre flask, and add water to 1000 c.c. Shake well, and allow to stand for an hour or two. Then test 10 c.c. of the clear supernatant liquid precisely as described for the sodium hypochlorite test. Each cubic centimetre of sodium thiosulphate used represents 0.00354 gram of available chlorine. The number of cubic centimetres used multiplied by 0.00354 multiplied by 1000 equals the percentage of available chlorine in the bleaching powder tested. In using 200 grams of bleaching powder for 10 litres of solution, the resulting sodium hypochlorite solution will contain, roughly, as much hypochlorite as is represented by the available chlorine of the bleaching powder divided by 50. Thus a bleaching powder containing 25 per cent. available chlorine will give 0.5 per cent. sodium hypochlorite solution. A less than 23 per cent. bleaching powder should not be used. When using higher than 28 per cent. bleaching powder, its amount should be correspondingly reduced. (Dakin and Dunham).

Uses.—Dakin's solution has two effects. (1) It dissolves dead tissue and (2) forms therewith highly germicidal chlorinated proteins (chloramines). It also dissolves catgut (in two to three hours), chromicized catgut (in a day), and even silk and linen, the latter least. It therefore promotes secondary hemorrhage. It is irritating to the skin but not to wounds. It parts with its chlorine rapidly in the presence of proteins (within one to two hours). In using Dakin's solution, the correct technique should be followed strictly, otherwise it had better not be employed.

The H. K. Mulford Co. of Philadelphia, furnish a "Concentrated Solution Sodium Hypochlorite" one volume of which is diluted with nine volumes of water and the amount of boric acid required (stated on the label of each bottle) to render the solution neutral is added. It should not be used if it is pink.

Daturina (a mixture of the alkaloids, atropine, hyoscyamine, and hyoscine).

Adult Dosage.—Min., gr. $\frac{1}{200}$; max., $\frac{1}{80}$.

Toxic Action.—Dryness and redness of the throat and skin, delirium, incoördination of movement, inability to walk, etc.

Decoctum Granati.

Adult Dosage.—Min., ʒiv; max., vi.

Method of Administration.—℞ Granati recentis, ʒxvii; aquæ, ʒxvii.

Boil down to ounces xii, and strain.

Sig.—Four to six ounces every hour for two or three doses, preceded and followed in a few hours by a brisk cathartic.

Uses.—Anthelmintic.

Dermatol; Bismuthi Subgallas (insoluble in water or alcohol).

Dosage.—6 months, gr. iii–v; 18 months, gr. v; 3 years, gr. v–x; 5 years, gr. x. Adult, min., gr. x; max., xx.

Method of Administration.—May be prescribed like Bismuthi Subcarbonas. Also used locally as a protective powder and in ointment form, 10 to 20 per cent.

Uses.—Intestinal astringent and antiseptic; gastric sedative; local antiseptic and protective.

Toxic Action.—Blue line on the gums, headache, nausea, vomiting, stomatitis, intestinal ulceration and diarrhœa, fever, rapid pulse, nephritis, œdema of the legs.

Dextri-Maltose Mead's (maltose 52 per cent., dextrin 41.7 per cent., sodium chloride 2 per cent. moisture 4.3 per cent., prepared by the action of, diastase on starch); 500 grams correspond approximately to 1920 calories.

Uses.—Nutritive.

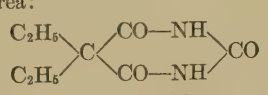
Dextrinum (an intermediate product in the conversion of starch into maltose or glucose; a transparent, brittle solid, soluble in water and dilute alcohol).

Uses.—Substitute for acacia and other gums.

Diachylon Unguentum (lead plaster 50, olive oil or white petrolatum 49, oil of lavender flowers 1).

Uses.—Local antiseptic and astringent emollient.

Diæthylbarbituricum Acidum; Veronal; Diethyl Malonyl Urea:



(soluble in about 150 of cold water, about 12 of boiling water; soluble in 8 of alcohol).

Adult Dosage.—Min., gr. v; av., x; max., xv.

Method of Administration.—℞ Veronali, gr. v, pulveres, tabellæ, vel capsulæ no. 6.

Sig.—One, one and a half to two hours before bedtime, followed by a cupful of hot water, tea, or milk.

Keep the bowels active with salines, and give alkalines, on prolonged use of the drug.

Physiologic Action and Uses.—Hypnotic; gr. viii have been fatal; relatively safe in small doses; begins to act in about half an hour.

Toxic Action.—Abdominal pain, sweating, pyrexia erythema, neuralgia, nausea, vomiting, oliguria, glycosuria, ataxia, somnolence deepening to coma, trembling and restlessness during the sleep, fall of temperature.

Diastasum (a mixture containing amylolytic enzymes from malt; soluble in water).

Adult Dosage.—Av., gr. viii.

Method of Administration.—℞ Diastasi, gr. viii, capsulæ no. 30.

Sig.—Capsule, t.i.d.p.c.

Uses.—Amylolytic ferment, converting starch into sugar.

Dichloramine = T; Paratoluenesulphonedichloramine: $CH_3.C_6H_4.SO_2NCl_2$.

Used as a local antiseptic dissolved in chlorinated paraffin wax ("chlorcosane"), one-fourth to one per cent. in the nose and throat; one-fourth to two per cent. for burns; five per cent. for wounds.

To make, say, a five per cent. solution, warm about a quarter of the oil, say 25 grams, to 75° or 80° C. (not above 80°), in a glass receptacle that has been cleansed with ether, then with chloroform, and dried; then add the 5 grams of dichloramine-T, work into a smooth paste, and then stir in the remaining 70 grams of cold oil. Shake the suspension frequently during the next twenty-four hours when it will dissolve. Filter and keep in a well-stoppered, dark amber bottle, protected from light, heat and moisture. It should keep perhaps about three months. Should a crystalline deposit occur, or should it smell of chlorine, or taste sour (due to HCl), the preparation should be rejected.

It is applied by means of a dry glass syringe or pipette, or cotton swab, or rubber tubes, or glass atomizer. No metal should be used; no alcohol. It gives off chlorine slowly for twenty-four hours; therefore it should be renewed once every twenty-four hours. Dakin's Solution parts with its chlorine in from one to two hours.

Dichloramine-T is much more actively germicidal than sodium hypochlorite, exerts a more prolonged antiseptic action, and is less irritating, but it has little solvent action on necrosed tissues.

Digipuratum (contains the cardiac stimulants, digitoxin and digitalin, but not the depressant, digitonin).

Adult Dosage.—Av., gr. iss.

Method of Administration.—℞ Digipurati, gr. iss, tabellæ no. 30.

Sig.—One tablet, three or four times a day, gradually reduced after the object of the drug has been accomplished.

Physiologic Action and Uses.—Digitalis slows and strengthens the heart, increases the pulse volume, and raises the arterial tension by stimulation of the vagus inhibitory and vaso-constrictor centres and the heart-muscle. It diminishes the conductivity of the bundle of His, and may even produce complete heart-block. It is thus of value in auricular fibrillation by protecting the ventricle against a constant shower of stimuli from the fibrillating auricle. (Halsey.) It increases the tendency to premature contractions or extra-systoles by increasing the irritability of the motor ganglia or centres in the heart. It acts directly on the vessel walls, causing vaso-constriction. Small doses, however, dilate the renal vessels, large doses constrict. The vessels of the portal system are constricted. Digitalis regulates the heart's action except in poisonous doses, which produce irregularity. Digitalis is diuretic in moderate doses. No appreciable effect is to be expected within twenty-four hours after oral administration.

Toxic Action.—Slowing of the pulse, occurrence of occasional extra-systoles, coupling of the beats, diminished excretion of urine, headache, nausea, vomiting, colic, diarrhœa, bad dreams, cardiac irregularity, heart-block, lowered temperature, faintness, vertigo, hallucinations, delirium, restlessness, delirium cordis, falling blood-pressure.

When these symptoms occur, discontinue the drug until the pulse rate begins to increase again (usually several days).

Contraindications to the administration of digitalis: acute infectious disease, fatty and other forms of degeneration of the heart-muscle, aortic disease, slow pulse, forcible apex beat and bounding arteries.

Digitalinum, French or Homolle's (consisting mainly of digitalinum verum).

Adult Dosage.—Min., gr. 1/240; av., 1/60; max., 1/30.

Method of Administration.—℞ Digitalini (French), gr. 1/240, tabellæ no. 30.

Sig.—One tablet, increased, if necessary, every two to four hours.

Maximum daily dose, gr. 1/10.

Digitalinum Germanicum (Merck; consisting largely of digitonin, with digitalinum verum and other glucosides).

Dosage.—6 months, gr. 1/200; 18 months, gr. 1/200; 3 years, gr. 1/150; 5 years, gr. 1/100. Adult, min., gr. 1/60; av., 1/10; max., 1/2.

Method of Administration.—℞ Digitalini Germanici (Merck), gr. 1/10, tabellæ no. 12.

Sig.—Tablet by mouth or subcutaneously, t.i.d.

Digitalinum (Nativelle's), see Digitoxinum.

Digitalinum Verum (a glucoside, $C_{35}H_{56}O_{14}$).

Adult Dosage.—Min., gr. 1/60; max., 1/30.

Method of Administration.—℞ Digitalini veri, gr. 1/30, pilulæ no. 12.

Sig.—A pill every three to four hours. It may be given hypodermically.

Digitalis Fluidextractum.

Adult Dosage.—Min., ♏i; max., iv.

Method of Administration.—℞ Fluidextracti digitalis, ℥i.

Sig.—One to four minims, well diluted in water, three or four times a day.

Digitalis Infusum Recens.

Dosage.—3 years, ℥ss–i; 5 years, ℥i–iii. Adult, min., ℥ii; max., iv.

Method of Administration.—℞ Infusi digitalis recentis, ℥iv.

Sig.—A dose, well diluted in water, three or four times a day. (See under Digipuratum for physiologic and toxic action, etc.)

Digitalis Pulvis.

Adult Dosage.—Min., gr. ss; av., i; max., ii.

Digitalis Tinctura (will keep only about twelve months; as good a preparation as any when standardized).

Dosage.—6 months, gt. ss; 18 months, gt. i; 3 years, gtt. i–ii; 5 years, gtt. ii–iii.; 5 to 10 years, ♏iii–v. Adult, min., ♏v; av., xv; max., xx.

Method of Administration.—℞ Tincturæ digitalis, ℥ss.

Sig.—Eight to ten minims, well diluted in water, every four hours, or three or four times a day.

The patient should be kept in bed while giving digitalis in full doses. (See under Digipuratum for physiologic and toxic action, etc.)

Digitoxinum: $C_{34}H_{54}O_{11}$, a glucoside, the Digitaline Nativelle of the French.

Adult Dosage.—Min., gr. 1/240; max., 1/120.

Method of Administration.—℞ Digitoxini, gr. 1/120, tabellæ no. 12.

Sig.—One tablet, no oftener than twice a day. Reduce or stop the dose immediately when the therapeutic effect or toxic symptoms appear, for the drug, when continued, has a cumulative action.

Dionin; Æthylmorphinæ Hydrochloridum (soluble in 8 of water; 22 of alcohol).

Dosage.—6 month , gr. 1/100; 18 months, gr. 1/100; 3 years, gr. 1/50; 5 years, gr. 1/20. Adult, min., gr. 1/8; av., 1/4 max., 1/2.

Method of Administration.—℞ Æthylmorphinæ hydrochloridi, gr. 1/4, tabellæ no. 6.

Sig.—One tablet two or three times a day, as required.

As a local ophthalmic analgesic and lymphagogue: a 4 to 10 per cent. aqueous solution, one drop three or four times a day, or a 1.5 to 10 per cent. ointment. Chemosis, redness, and burning should continue for one to two minutes after its application, in order to secure the desired therapeutic effect.

Physiologic Action and Uses.—Nervous sedative and analgesic; action upon the respiratory and cough centres the same as codeine; ophthalmic analgesic and lymphagogue, causing local hyperæmia and acute conjunctival œdema.

Diphtheria Antitoxin, see Serum Antidiphthericum.

Diuretin; Theobrominæ Sodio-Salicylas (soluble in 1 part of water).

Adult Dosage.—Min., gr. x; av., xv; max., xx.

Method of Administration.—℞ Theobrominæ sodio salicylatis, gr. xv, pulveres in charta cerata no. 12. Dispense in a well-sealed bottle (for it rapidly absorbs carbonic acid from the air and decomposes).

Sig.—One powder, dissolved in hot water, two to four times a day, up to ℥ss–℥iss in twenty-four hours, avoiding acids and acid vegetable juices, which precipitate the alkaloid.

Uses.—Diuretic. It should be used for only one or two days at a time, preferably one day.

Dobell's Solution.

Method of Administration.—℞ Phenolis cryst., gr. xxiv; sodii boratis, ℥ii; sodii bicarbonatis, ℥ii; glycerini, ℥ss; aquæ destillatæ, *q.s.* ad, Oi.

M. Sig.—Use as a nasal or throat spray or mouth-wash, twice daily.

Uses.—Alkaline antiseptic.

Donovan's Solution: Liquor Arseni et Hydrargyri Iodidi.

Adult Dosage.—Min., ♏i; av., iss; max., v.

Method of Administration.—℞ Liquoris arseni et hydrargyri iodidi, ℥ii.

Sig.—Two drops in water, t.i.d.p.c.

Uses.—Alterative.

Dover's Powder; Pulvis Ipecacuanhæ et Opii (ipecac 10, powdered opium 10, sugar of milk 80).

Dosage.—6 months, gr. 1/8–1/4; 18 months, gr. 1/2–3/4; 3 years, gr. i–iss; 5 years, gr. ii–iii. Adult, min., gr. v; av., viiss; max., xv.

Method of Administration.—℞ Pulveris ipecacuanhæ et opii, gr. v, pulveres no. 6.

Sig.—One powder as required (about every three to four hours, if necessary).

Uses.—Nervous sedative; sedative expectorant; diaphoretic.

Duboisinæ Sulphas.

Adult Dosage.—Min., gr. 1/100; av., 1/60; max., 1/30.

Method of Administration.—Gr. 1/100–1/75 may be administered hypodermically, twice daily.

Used as a mydriatic, gr. ii ad ℥i, in the place of atropine, when the latter gives rise to conjunctivitis.

Physiologic Action and Uses.—Nervous sedative; anhidrotic; mydriatic; action similar to that of atropine.

Toxic Action.—Vertigo, nausea, syncope, dryness and redness of the throat and skin, delirium, incoordination of movement.

Dulcin; Sucrol (Para-phenetol-carbamide; soluble in 800 of water).

Adult Dosage.—Gr. ss-ii, up to a daily maximum of 30 grs.

Uses.—Sugar substitute, about 200 times sweeter than sugar.

Duotal; Guaiacolis Carbonas: $(C_6H_4OCH_3)_2CO_3$ (insoluble in water; soluble in alcohol 1 : 60).

Adult Dosage.—Min., gr. v; av., xv; max., xx.

Method of Administration.—℞ Guaiacolis carbonatis, gr. xv, pulveres, capsulæ, vel trochisci no. 12.

Sig.—One, t.i.d.p.c. The dose may be gradually increased to a maximum of ℥iss per diem. The drug may be administered, if desired, in codliver oil, a bitter tincture, or mucilage of tragacanth.

Uses.—Intestinal antiseptic; bronchial stimulant.

Eisenzucker; Ferri Oxidum Saccharatum.

Adult Dosage.—Av., gr. iii.

Method of Administration.—℞ Ferri oxidi saccharati, gr. iii, tabellæ no. 30.

Sig.—Tablet, t.i.d.p.c., crushed with the teeth before swallowing.

Elaterinum, $C_{20}H_{28}O_5$ (not to be confounded with Elaterium).

Adult Dosage.—Min., gr. 1/20; max., 1/10.

Method of Administration.—℞ Elaterini, gr. 1/20, tabellæ no. 6.

Sig.—Tablet two or three times a day.

Physiologic Action and Uses.—Hydragogue cathartic, acting upon both the large and small intestine.

Toxic Action.—Nausea, vomiting, prostration.

Elaterini Trituratio (Elaterin 10, sugar of milk 90).

Adult Dosage.—Min., gr. 1/4; av., 1/2; max., i.

Method of Administration.—℞ Triturationis elaterini, gr. 1/4, tabellæ no. 6.

Sig.—Tablet two or three times a day.

Physiologic Action and Uses.—Hydragogue cathartic, acting upon both the large and small intestine.

Toxic Action.—Nausea, vomiting, prostration.

Elder Flowers; Sambucus.

Adult Dosage.—Min., ℥ss; max., i.

Method of Administration.—In hot infusion, as a tea.

Uses.—Diaphoretic.

Electrargol (a colloidal suspension of silver, 0.04 per cent., containing a small percentage of sodium arabate).

Adult Dosage.—Min., 5 c.c.; max., 25 c.c.

Method of Administration.—Injected subcutaneously, intramuscularly, or intravenously after being made isotonic by the addition of sodium chloride solution.

Uses.—Antiseptic and germicide.

Electric Bath, see Baths, Medicated.

Elixir Aromaticum vel Simplex (comp. spt. of orange 1.2, purified talc 3, syrup 37½; alcohol and distilled water to 100).

Adult Dosage.—Min., ℥i; max., ℥i+.

Uses.—Flavoring vehicle and diluent.

Elixir Calcii et Sodii Glycerophosphati.

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Elixiris calcii et sodii glycerophosphati, ℥iv.

Sig.—Two teaspoonfuls, t.i.d.

Uses.—Alterative; tonic.

Elixir Ferri Quininæ et Strychninæ Phosphatum.

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Elixiris ferri, quininæ, et strychninæ phosphati, ℥iv.

Sig.—Teaspoonful in half a tumbler of water, t.i.d.p.c.

Uses.—Tonic.

Elixir Glycerophosphati Compositum, N. F. (Sod.

glycerophos. 4, calc. glycerophos. 1.6, ferric glycerophos. 0.3, soluble manganese glycerophos. 0.2, quinine glycerophos. 0.1, strychnine glycerophos. 0.015, lactic acid 1, in compt. spt. cardamom, alcohol, glycerine and water to 100).

Adult Dosage.—Av., ʒii.

Method of Administration.—℞ Elixiris glycerophosphati compositi, N. F., ʒviii.

Sig.—Two teaspoonfuls, t.i.d.

Uses.—Tonic.

Elixir Guaranæ (contains caffeine and theobromine).

Adult Dosage.—Min., ʒi; max., ii.

Method of Administration.—℞ Elixiris guaranæ ʒii.

Sig.—One or two teaspoonfuls every four hours until relieved.

Uses.—Analgesic; stimulant.

Elixir Guaranæ et Celerinæ (supposed to contain caffeine, coca, celery, kola, and viburnum, with aromatics).

Adult Dosage.—Min., ʒi; max., ii.

Method of Administration.—℞ Potassii bromidi, ʒii (gr. xv per dose); elixiris guaranæ et celerinæ, ʒiv.

M. Sig.—A dessertspoonful in hot water, every four hours (Kelly's Dysmenorrhœa mixture).

Elixir Phosphori, N. F. (phosphorus 0.025 per cent., in chloroform, alcohol, glycerine, and water, flavored with comp. spt. of orange and oil of anise; one dram contains gr. 1/67 of phosphorus; deteriorates rapidly).

Adult Dosage.—Min., ♏xv; max., ʒi.

Method of Administration.—℞ Elixir phosphori, ʒii.

Sig.—One dram, t.i.d.

Uses.—Alterative. See Phosphoratum Oleum.

Elixir Simplex, see Elixir Aromaticum, above.

Elixir Terpini Hydratis, N. F. (terpin hydrate, 1.75 per cent., tr. of sweet orange peel, spirit of bitter almond, alcohol about 42 per cent., glycerine, syrup, and water).

Adult Dosage.—Av., ʒi.

Method of Administration.—℞ Elixiris terpini hydratis, N. F., ʒii.

Sig.—Teaspoonful every three to four hours, with plenty of water.

Uses.—Broncho-pulmonary antiseptic; stimulating expectorant; diaphoretic; diuretic; used in profuse bronchorrhœa.

Emetinæ Hydrochloridum: $C_{30}H_{44}N_2O_4.2HCl$. (Alkaloid; freely soluble in water or alcohol).

Dosage.—Under 1 year, gr. 1/8 for two or three doses; 2 years, gr. 1/6, every twelve hours for three doses (Martin); Adults, gr. ss–iss–ii.

It may be administered by mouth in keratin-coated capsules, with a bowl of milk or gruel on an empty stomach; or it may be administered hypodermically. Give gr. iss to ii on alternate days for five doses, followed by three or four weeks rest, and a repetition of the course if necessary.

Uses.—Amœbicide.

Toxic Action.—Vertigo, malaise, nausea, vomiting, diarrhœa, facial flushing,—dyspnœa, shock.

Emplastrum Adhæsivum (rubber 2, petrolatum 2, lead plaster 96).

Adhesive plaster may be removed by means of a small quantity of oil of wintergreen. (Potter.)

Emplastrum Belladonnæ (ext. belladonna 30 per cent., with adhesive plaster).

Uses.—Anodyne plaster.

Emplastrum Capsici (oleoresin of capsicum with adhesive plaster).

Uses.—Warming plaster.

Emplastrum Hydrargyri (mercury 30, oleate of mercury 1, hydrous wool fat 10, lead plaster 59).

Uses.—Antiseptic.

Emplastrum Picis Cantharidatum (cerate of cantharides 8, Burgundy pitch to 100).

Method of Administration.—Moisten a square inch with olive-oil and apply. Cover with a dossil of gauze secured with adhesive. Remove in six to eight hours, or the next day, and dress with boric ointment on surgical lint.

Uses.—Vesicant.

Emplastrum Plumbi (lead acetate 60, soap 100).

Emplastrum Saponis (soap 10, lead plaster 90, water, *q.s.*).

Emulsum Asafœtidæ (4 per cent.) in water.

Adult Dosage.—Min., ʒii; av., iv; max., ʒi.

Method of Administration.—℞ Emulsi asafœtidæ, ʒiv.

Sig.—Two teaspoonfuls, four times a day; or two tablespoonfuls in one dose.

Used as an enema in tympanites.

Uses.—Antispasmodic; nerve stimulant; carminative; stimulating expectorant; tonic; laxative; diuretic; diaphoretic; emmenagogue; aphrodisiac; anthelmintic.

Toxic Action.—Nausea, vomiting, purging.

Emulsum Olei Morrhuæ, see Codliver Oil Emulsions.

Emulsum Olei Terebinthinæ (rectified oil 15, expressed oil of almond 5, syrup 25, acacia 15, water to 100).

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Emulsi olei terebinthinæ, ʒi.

Sig.—Teaspoonful, three to six times daily.

Enzymol (contains pepsin and HCl).

Method of Administration.—Used locally as a digestant of necrosed tissue, diluted with one-half to one to two volumes of water, or better, 0.2 per cent. hydrochloric acid solution.

Uses.—Proteolytic.

Eosote; Creosoti Valeras.

Adult Dosage.—Av., gr. iii+.

Method of Administration.—℞ Creosoti valeratis, gr. iii, capsulæ no. 24.

Sig.—Capsule t.i.d.p.c., gradually increased in dosage.

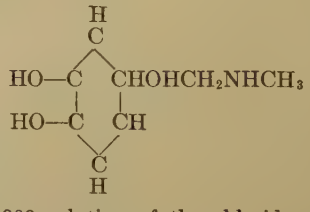
Physiologic Action and Uses.—Pulminary sedative expectorant and antiseptic; intestinal antiseptic; tonic. It passes the stomach unchanged, and is decomposed in the intestines; is not a gastric irritant.

Toxic Action.—Resembles phenol poisoning.

Epicarin Unguentum (Epicarin: oxynaphthyl-ortho-oxytoluic acid or betanaphtholhydroxytoluic acid, $C_6H_3(OH)(COOH)(CH_2C_{10}H_6OH)$ 2 : 3 : 1, 5 to 20 per cent. ointment, with lanolin or petrolatum as a base, or in the form of oily or alcoholic solutions, 10 per cent.).

Uses.—Antiseptic emollient.

Epinephrina; Adrenalin: 1, 2-dihydroxy-4²-methyl-amino-ethyl-4¹-ol-benzene, a brenzcatechin derivative:



Of a 1 : 1000 solution of the chloride ♏x = gr. 1/100 of the chloride).

Dosage.—18 months, ♏ii; 3 years, ♏v; 5 years, ♏v. Adult, min., ♏v; av., x; max., xxx.

Method of Administration.—℞ Adrenalini chloridi, 1 : 1000, ℥i.

Sig.—Ten to thirty drops in a teaspoonful of water, by mouth, every one to four hours for two or three doses.

If given hypodermically, it should be administered in one pint of normal saline solution, very slowly.

Physiologic Action and Uses.—A specific excitant of sympathetic nerve-endings; strengthens and accelerates the heart beat through stimulation of the accelerans and direct action on the heart; dilates the pupil through stimulation of the cervical sympathetic; increases the salivary secretion through stimulation of the sympathetic nerves; relaxes the bronchial musculature through stimulation of the pulmonary sympathetics; acts upon the inhibitory sympathetic fibres of the stomach, intestines, and bladder; stimulates the uterus; stimulates vasoconstrictor nerve-endings, thereby raising the blood-pressure; does not affect autonomic or parasympathetic nerves (vagus, chorda tympani, oculo-motor (autonymic fibres), sacral nerves to the colon, bladder, rectum, and genital organs). It is synergistic with cocaine. If epinephrine is old it may cause vasodilatation and fall of pressure instead of vasoconstriction.

Toxic Action.—See under Adrenalin um.

Epsom Salt; Magnesii Sulphas: $MgSo_4+7H_2O$; soluble in 1 of water.

Dosage.—6 months, gr. x–xv; 18 months, gr. xx; 3 years, gr. xx–xxx; 5 years, ℥ss–i. Adult, min., ℥ii; av., iv; max., ℥i.

Method of Administration.—℞ Magnesii sulphatis, ℥xv (gr. lxxv per teaspoonful); aquæ, ℥ii.

M. Sig.—Teaspoonful, well diluted in coffee, every hour, until effectual.

Physiologic Action and Uses.—Saline cathartic, causing purgation by osmosis and interference with the absorption of fluids from the bowel; acts in one to twenty hours.

Ergotæ Extractum.

Adult Dosage.—Min., gr. ii; av., iv; max., x.

Method of Administration.—℞ Extracti ergotæ, gr. iv, pilulæ no. 12.

Sig.—A pill, t.i.d.

Physiologic Action and Uses.—Uterine stimulant (acting peripherally); hæmostatic (stimulating the vaso-constrictor nerve endings); slows the pulse by stimulating the vagus centres.

Toxic Action.—Cardiac depression, slow heart, high followed by low tension, nausea, vomiting, purging, vertigo, headache, retention of urine due to contraction of the vesical sphincter; fall of temperature, convulsions.

Chronic ergotism presents a convulsive form and a gangrenous form.

Ergotæ Fluidextractum.

Dosage.—6 months, gtt. ii–iii; 18 months, gtt. v; 3 years, gtt. v–viii; 5 years, gtt. x–xv. Adult, min. ℥ss; av., i; max., iv.

Method of Administration.—℞ Fluidextracti ergotæ.

Sig.—A teaspoonful in water, by mouth. ♏xx hypodermically.

Physiologic Action and Uses.—Uterine stimulant (acting peripherally); hæmostatic (stimulating the vaso-constrictor nerve endings); slows the pulse by stimulating the vagus centres.

Toxic Action.—Cardiac depression, slow heart, high followed by low tension, nausea, vomiting, purging, vertigo, headache, retention of urine due to contraction of the vesical sphincter, fall of temperature, convulsions.

Chronic ergotism presents a convulsive form and a gangrenous form.

Ergotin.

Adult Dosage.—Min., gr. i; av., ii; max., v.

Method of Administration.—℞ Ergotinæ, gr. i, pilulæ no. 12.

Sig.—A pill, t.i.d.

Physiologic Action and Uses.—Uterine stimulant (acting peripherally); hæmostatic (stimulating the vaso-constrictor nerve endings); slows the pulse by stimulating the vagus centres.

Toxic Action.—Cardiac depression, slow heart, high followed by low tension, nausea, vomiting, purging, vertigo, headache, retention of urine due to contraction of the vesical sphincter, fall of temperature, convulsions.

Chronic ergotism presents a convulsive form and a gangrenous form.

Ergotol (Sharp and Dohme).

Adult Dosage.—Min., ♏xv; max., lx.

Method of Administration.—℞ Ergotol (Sharp and Dohme), ℥i.

Sig.—♏xv, in water, three to six times daily.

Forty to sixty minims may be injected intramuscularly and the injection repeated, if necessary.

Erythrol Tetranitras; Tetranitrin: $C_4H_6(NO_3)_4$.

Adult Dosage.—Min., gr. ½; av., ½; max., i.

Method of Administration.—℞ Erthyrol tetranitratis, gr. ½, tabellæ no. 100.

Sig.—One tablet every three to six hours, gradually increased to gr. ½–¾–i, or until the occurrence of flushing, throbbing, or slight transient faintness, indicates that the physiological dose has been reached.

Physiologic Action and Uses.—Vaso-dilator, acting directly upon the vascular muscle; action begins in fifteen minutes and persists for three or four to six hours.

Eserinæ (Physostigminæ; alkaloid: $C_{15}H_{21}N_3O_2$) **Salicylas** (soluble in 75 of water).

Adult Dosage.—Min., gr. 1/100; av., 1/60; max., 1/30.

Method of Administration.—℞ Physostigminæ salicylatis, vel sulphatis, gr. 1/60, tabellæ no. 6.

Sig.—One tablet, by mouth, or hypodermically once or twice a day.

For the eye: gr. ii–iv ad ℥i of water or oil, or from 0.1 to 1 per cent.

Physiologic Action and Uses.—Physostigmine or eserine is the antagonist of atropine. It increases the excitability of autonomic or parasympathetic nerve endings; causes myosis and contraction of the ciliary muscle (spasm of accommodation), with resulting relaxation of the capsule of the lens, and increased sphericity of the latter and diminution of intraocular tension; increases the secretion of tears, saliva, sweat, and the bronchial secretions; contracts the bronchial, gastro-intestinal, and vesical muscles; increases the excitability of the nerve endings supplying striped or voluntary muscles; also renders more excitable the motor cortical centres, tending to convulsions; slows the heart, deepens respirations; depresses the vagus and the action of the spinal cord.

Toxic Action.—Muscular weakness and tremor, loss of reflex action, nausea, salivation, vomiting, severe intestinal colic, purging, sweating, myosis, bradycardia, dyspnœa, motor paralysis. Eserine in the eye may produce a feeling of great tension in the eye, headache, and nausea.

Eserinæ (Physostigminæ) **Sulphas** (very soluble in water).

Adult Dosage.—Min., 1/100; av., 1/60; max., 1/30.

Method of Administration.—See above.

Essentia Pepsini (Fairchild; 18.5 per cent. of alcohol).

Dosage.—6 months, gtt. xx; 18 months, gtt. xxx–xl; 3 years, gtt. xl–℥i; 5 years, ℥i. Adult, av., ℥i+.

Method of Administration.—℞ Essentiæ pepsini, ℥iv.

Sig.—Teaspoonful, in water, t.i.d.p.c.

Uses.—Proteolytic and milk-curdling.

Ether: $(C_2H_5)_2O$ (soluble in 12 of water).

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Ætheris, ℥ss.

Sig.—Fifteen to thirty drops in sweetened water, every hour, or as required.

Hypodermically, for heart-failure, ♏x–xx–lx.

Ether pneumonia is possibly due to the aspiration of mucous and saliva, the secretion of which is increased by ether. This may be lessened or prevented by a hypodermic of atropine or scopolamine just before the administration of the ether.

Uses.—Cardiovascular stimulant; stimulant of the vaso-constrictor and respiratory centres; anodyne; carminative; antispasmodic; sedative; general anæsthetic (contraindicated in bronchial and renal disease).

Conditions in which anæsthesia is dangerous are cardiac degeneration or dilatation, renal disease, pulmonary disease, asthma, diabetes mellitus, arteriosclerosis, chronic alcoholism, cerebral tumor, fainting spells, enlarged tonsils.

Toxic Action.—Undue slowing of the respiration and rapid heart action.

Treatment: Lower the patient's head, draw the tongue forward, but not too far, perform artificial respiration, apply heat to the trunk and limbs, slap the face and chest with a cold wet towel, administer strychnine and atropine hypodermically.

Etheris Spiritus (ether ½, alcohol ⅓).

Adult Dosage.—Min., ♏x; av., ℥i; max., ii.

℞ Spiritus ætheris, ℥i.

Sig.—Teaspoonful in a wineglass of sweetened water, as required; or every one to three hours.

Uses.—Diffusible stimulant; anodyne; carminative; aids digestion of fats.

Etheris Spiritus Compositus (Hoffmann's Anodyne: Ether, 32½, alcohol 65, etherial oil 2½).

Dosage.—6 months, gtt. ii; 18 months, gtt. iii–v; 3 years, gtt. v; 5 years, gtt. v–x. Adult, min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Spiritus ætheris compositi, ℥i.

Sig.—Teaspoonful in a wineglass of water, as required, or every one to three hours.

Uses.—Anodyne, carminative, stimulant.

Etheris Spiritus Nitrosi (Sweet Spirits of Nitre: Ethyl nitrite, $C_2H_5NO_2$, 4 per cent. in alcohol; miscible with alcohol or water; should not be kept long, as it turns acid).

Dosage.—6 months, gtt. ii–iii; 18 months, gtt. iii–v; 3 years, gtt. v; 5 years, gtt. v–x. Adult, min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Spiritus ætheris nitrosi, ℥i.

Sig.—One teaspoonful, well diluted in sweetened water, every one to three hours.

Uses.—Diaphoretic, diuretic, carminative.

Ethylis Carbamas; Urethane: $NH_2.CO.O(C_2H_5)$ (soluble in 0.45 of water and 0.8 of alcohol).

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—In powder, cachets, or solution, best gr. v, frequently repeated, as a full dose may cause vomiting. (Potter.)

Uses.—Very mild hypnotic; diuretic.

Ethylis Chloridum, C_2H_5Cl.

Uses.—Transient general anæsthetic; local anæsthetic in the form of a spray, producing intense cold.

Ethylis Hydrocupreinæ Hydrochloridum; Optochin (a quinine alkaloid) Hydrochloride; $C_{19}H_{22}N_2OH.O.C_2H_5.HCl$.

Adult Dosage.—Av., gr. viiss, t.i.d.

Method of Administration.—One to two per cent. aqueous solution, freshly prepared, or 1 to 2 per cent. solution in oil or ointment; specific in serpent ulcer of the cornea due to the pneumococcus. One to two per cent. solution as a gonococcocide.

For pneumonia, 0.024 gram per kilogram of body weight every twenty-four hours is required to produce a bactericidal action in the blood serum. Thus, for the average sized individual, the amount for twenty-four hours is 1.5 grams, administered as follows: initial dose 0.45 gram, followed every three hours by 0.15 gram; second twenty-four hours, ten doses of 0.15 gram; best given in capsule. (Allan M. Chesney.)

Uses.—Antiseptic; antipneumococcic.

Toxic Action.—Tinnitus, deafness, amblyopia, amaurosis, retinitis.

Ethylis Iodidum, C_2H_5I.

Adult Dosage.—Av., ♏xv.

Method of Administration.—On lint, inhaled in asthma.

Uses.—Antispasmodic; general stimulant; anæsthetic.

Ethylmorphinæ Hydrochloridum; Dionin (soluble in 8 of water; 22 of alcohol).

Dosage.—6 months, gr. 1/100; 18 months, gr. 1/100; 3 years, gr. 1/50; 5 years, gr. 1/20. Adult, min., gr. ⅙; av., ¼; max., ½.

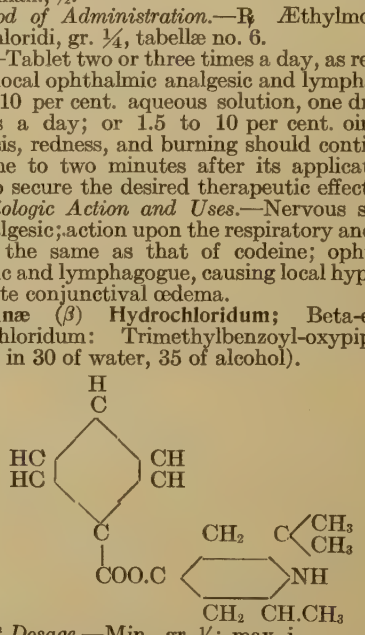
Method of Administration.—℞ Æthylmorphinæ hydrochloridi, gr. ¼, tabellæ no. 6.

Sig.—Tablet two or three times a day, as required.

As a local ophthalmic analgesic and lymphagogue, a 4 to 10 per cent. aqueous solution, one drop 3 or 4 times a day; or 1.5 to 10 per cent. ointment. Chemosis, redness, and burning should continue for from one to two minutes after its application, in order to secure the desired therapeutic effect.

Physiologic Action and Uses.—Nervous sedative and analgesic; action upon the respiratory and cough centres the same as that of codeine; ophthalmic analgesic and lymphagogue, causing local hyperæmia and acute conjunctival œdema.

Eucainæ (β) Hydrochloridum; Beta-eucainæ Hydrochloridum: Trimethylbenzoyl-oxypiperidine (soluble in 30 of water, 35 of alcohol).



Adult Dosage.—Min., gr. ⅛; max. i.

Method of Administration.—For the eye, 2 to 3 per cent. solutions.

For the nose and throat, 5 to 10 per cent. solutions.

For hypodermic use, 0.2 per cent. It may be sterilized by boiling.

Physiologic Action and Uses.—Local anæsthetic: action like that of cocaine, but less toxic.

Eucalypti Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., ℥i.

Method of Administration.—℞ Fluidextracti eucalypti, ℥i.

Sig.—Thirty drops in water, every two to four hours.

Uses.—Naso-pharyngeal, gastro-intestinal, bronchopulmonary, and genito-urinary stimulant and antiseptic; diaphoretic.

Toxic Action.—Indigestion, nausea, vomiting, diarrhœa, lowered temperature, muscular weakness, narcosis.

Eucalypti Oleum.

Adult Dosage.—Min., ♏v; av., viii; max., xx.

Method of Administration.—℞ Olei eucalypti, ♏x, capsulæ no. 12.

Sig.—Capsule every two to four hours.

For local use, 5 per cent. in liquid petrolatum.

Uses.—Naso-pharyngeal, gastro-intestinal, bronchopulmonary, and genito-urinary stimulant and antiseptic; diaphoretic.

Toxic Action.—Indigestion, nausea, vomiting, diarrhœa, lowered temperature, muscular weakness, narcosis.

Eucalyptol; Cineol: $C_{10}H_{18}O$ (an organic oxide obtained from oil of eucalyptus).

Adult Dosage.—Min., ♏iii; av., v; max., x.

Method of Administration.—℞ Eucalyptol, ♏v, capsulæ no. 12.

Sig.—Capsule every two to four hours. It may be dispensed in emulsion or in dilute alcohol.

For local use, 5 per cent. in liquid petrolatum.

Uses.—Naso-pharyngeal, gastro-intestinal, bronchopulmonary, and genito-urinary stimulant and antiseptic; diaphoretic.

Toxic Action.—Indigestion, nausea, vomiting, diarrhœa, lowered temperature, muscular weakness, narcosis.

Eumydrin; Methylatropinæ Nitras: $C_6H_5(HO.CH_2).CH.CO_2.C_7H_{11}N(CH_3)_2NO_3$.

Adult Dosage.—Min., gr. 1/60; max., 1/4.

Method of Administration.—As a mydriatic, gr. v ad ℥i, one to two drops in the eye.

Uses.—Mydriatic; anhidrotic; used for the same purposes as atropine; much less toxic than atropine.

Euonymi Extractum.

Adult Dosage.—Min., gr. i; av., ii; max., v.

Method of Administration.—℞ Extracti euonymi, gr. ii, pilulæ no. 3.

Sig.—One pill at bedtime.

Uses.—Cholagogue cathartic; diuretic. "The uncertain absorption of this drug makes its use inadvisable." (Epitome of the U. S. P. and N. F.)

Toxic Action.—Toxic digitalis effects.

Euonymi Fluidextractum.

Adult Dosage.—Min., ♏v; av., viii; max., xv.

Method of Administration.—℞ Fluidextracti euonymi, ℥i.

Sig.—Eight drops in water at bedtime. (See above.)

Euphthalminæ Hydrochloridum; Phenylglycolyl-Methyl-Vinyl Diacetonalkamine Hydrochloride: $C_5H_6N(CH_2)_4(C_6H_5.CHOH.COO).HCl$.

Method of Administration.—Two or three drops of a 5 to 10 per cent. solution in the eye.

Uses.—Transient mydriatic.

Euporphina.

Adult Dosage.—Min., gr. 1/30; max., 1/12.

Method of Administration.—℞ Euporphinæ, gr. 1/30, pulveres no. 20.

Sig.—One powder every two hours (up to gr. 1/6 to 2/3 a day).

Uses.—Stimulating expectorant; emetic.

Euquinina; Quininæ Æthylcarbonas: $C_2H_5O.CO.O.C_{20}H_{23}N_2O$ (sparingly soluble in water, soluble in alcohol and ether).

Dosage.—6 months, gr. ii–iii; 18 months, gr. iii–iv; 3 years, gr. iii–v; 5 years, gr. v. Adult, gr. v; max., xxx.

Method of Administration.—℞ Euquininæ, gr. v–x, pulveres, tabellæ, vel capsulæ no. 6.

Sig.—One, once or twice a day.

Physiologic Action and Uses.—Antimalarial; tasteless in substance, but bitter in solution.

Europhen; Di-Isobutyl-Cresol-Iodide: $C_6H_3(C_4H_9).(CH_3)(OI).C_6H_2(CH_3)(:O)(.C_4H_9)$.

Adult Dosage.—Min., gr. iii; max., v.

Method of Administration.—In pill form. As an ointment, with lanolin, 10 per cent.

Uses.—Antiseptic powder; substitute for iodoform.

Exalgin; Methylis Acetanelidum (sparingly soluble in water; readily soluble in dilute alcohol).

Adult Dosage.—Min., gr. i; av., iii; max., vi.

Method of Administration.—℞ Methylis acetanelidi, gr. iii, pulveres no. 4.

Sig.—A powder in wine, twice daily, as required. No more than gr. xii per diem.

Uses.—Analgesic; nervous sedative.

Extractum Agarici Alcoholicum.

Adult Dosage.—Av., gr. iii.

Method of Administration.—℞ Extracti alcoholici agarici albi, gr. iii.

Mitte talis pulveres sive pilulæ no. 6.

Sig.—One at bedtime.

Physiologic Action and Uses.—Anhidrotic, paralyzing the secretory nerve endings like atropine.

Toxic Action.—Vomiting and purging.

Extractum Aloes.

Adult Dosage.—Min., gr. ss; av., iii; max., viiss.

Method of Administration.—℞ Extracti aloes, pilulæ, gr. iii, no. 24.

Sig.—A pill at bedtime.

Physiologic Action and Uses.—Purgative; acts in eight to ten hours, chiefly on the lower bowel, producing pelvic congestion; emmenagogue.

Extractum Belladonnæ Foliorum (gr. 1/4 corresponds approximately to gr. 1/300 of mydriatic alkaloids).

Adult Dosage.—Min., gr. 1/10; av., 1/6; max., 2/3.

Method of Administration.—℞ Extracti belladonnæ, gr. 1/6, pilulæ no. 12.

Sig.—One pill t.i.d. See Atropina.

Uses.—Local anodyne, etc. See Atropina.

Toxic Action.—Dryness of the mouth, throat, and skin, a red flush on the face and neck (in the "blushing area"), dilatation of the pupils, rapid pulse, nausea, husky phonation, difficulty in swallowing, mental excitement, tremor, and marked motor activity, perhaps convulsions; acceleration followed by slowing of the respiration, low blood-pressure, eventual slowing of the heart, stupor, coma.

Extractum Cannabis Indicæ (Biologically assayed)

Adult Dosage.—Min., gr. 1/8; av., 1/3; max., ii.

Method of Administration.—℞ Extracti cannabis indicæ (biologically assayed), gr. 1/6, pilulæ no. 15.

Sig.—One pill, repeated every half to one hour, until effectual

Uses.—Analgesic; hypnotic; aphrodisiac.

Toxic Action.—Sensation of enormous dimensions, dilatation of the pupils, anæsthesia, diminished reflexes, somnolence, catalepsy, coma, cardiac failure.

Extractum Cascaræ Sagradæ.

Dosage.—18 months, gr. ss; 3 years, gr. i–ii; 5 years, gr. iii–v. Adult, min., gr. v; av., viii; max., x.

Method of Administration.—℞ Extracti cascaræ sagradæ, gr. v, pilulæ no. 24.

Sig.—A pill twice daily, or two pills at bedtime.

Physiologic Action and Uses.—Laxative; acts chiefly on the lower bowel. The dose can be gradually reduced without secondary constipation following.

Extractum Colocynthidis.

Adult Dosage.—Min., gr. 1/4; av., 1/2; max., i.

Method of Administration.—℞ Extracti colocynthidis, gr. 1/4, pulveres no. 6.

Sig.—One powder at bedtime.

Uses.—Hydragogue cathartic.

Toxic Action.—Gastro-enteritis.

Extractum Colocynthidis Compositum (ext. colocynth. 16, aloes 50, cardamom 6, resin of scammony 14, soap 14, alcohol 10).

Adult Dosage.—Min., gr. v; av., viiss; max., xx.

Method of Administration.—℞ Extracti colocynthidis compositi, gr. v, pilulæ no. 6.

Sig.—One or two pills at bedtime.

Uses.—Hydragogue cathartic.

Toxic Action.—Gastro-enteritis.

Extractum Ergotæ.

Adult Dosage.—Min., gr. ii; av., iv; max., x.

Method of Administration.—℞ Extracti ergotæ, gr. iv, pilulæ no. 12.

Sig.—A pill t.i.d.

Physiologic Action and Uses.—Uterine stimulant, acting peripherally; hæmostatic (stimulating the vaso-constrictor nerve endings); slows the pulse by stimulating the vagus centres.

Toxic Action.—Cardiac depression, slow heart, high followed by low tension, nausea, vomiting, purging, vertigo, headache, retention of urine due to contraction of the vesical sphincter, fall of temperature, convulsions.

Chronic ergotism presents a convulsive form and a gangrenous form.

Extractum Euonymi.

Adult Dosage.—Min., gr. i; av., ii; max., v.

Method of Administration.—℞ Extracti euonymi, gr. ii, pilulæ no. 3.

Sig.—One pill at bedtime.

Physiologic Action and Uses.—Cholagogue cathartic; diuretic. "The uncertain absorption of this drug makes its use inadvisable" (Epitome of the U. S. P. and N. F.).

Toxic Action.—Toxic digitalis effects.

Extractum Fellis Bovis (Oxgall Extract).

Adult Dosage.—Av., gr. iss.

Method of Administration.—℞ Extracti fellis bovis, gr. iss, pilulæ vel capsulæ (hardened with formalin), no. 12.

Sig.—One pill, t.i.d.p.c.

Physiologic Action and Uses.—Cholagogue; laxative; intestinal antiseptic; aids in the absorption of fats.

Extractum Gentianæ.

Dosage.—3 years, gr. ¼–½; 5 years, gr. ss–i. Adult, min., gr. i; av., iv; max., x.

Method of Administration.—℞ Extracti gentianæ, gr. iv, pilulæ no. 30.

Sig.—Pill, t.i.d.p.c.

Physiologic Action and Uses.—Stomachic; bitter tonic; contains tannin in small amount.

Extractum Hamamelidis Destillatum; Aqua Hamamelidis.

Adult Dosage.—Min., ʒi; av., ii; max., iii.

Uses.—Astringent; hæmostatic.

Toxic Action.—Throbbing pain in the head.

Extractum Hydrastis.

Adult Dosage.—Av., gr. viii.

Method of Administration.—℞ Extracti hydrastis, gr. viii, capsulæ no. 24.

Sig.—Capsule, three or four times daily.

Physiologic Action and Uses.—Uterine stimulant; hæmostatic; stomachic; exerts a peripheral exciting action upon the uterus, and upon the blood-vessels, and also stimulates the vasomotor centres.

Toxic Action.—Indigestion, comstipation, tetanic convulsions, motor depression, medullary, spinal, and cardiac depression.

Extractum Hyoscyami.

Adult Dosage.—Min., gr. i; av., ii; max., viii.

Method of Administration.—℞ Extracti hyoscyami, gr. i–ii, pilulæ no. 12.

Sig.—Pill t.i.d.

Uses.—Cerebral sedative; anodyne; hypnotic; mydriatic.

Toxic Action.—Central respiratory depression, fall of blood-pressure, dryness in the mouth and throat, mydriasis and paralysis of accommodation, hypnosis, delirium, collapse.

Extractum Krameriæ (Rhatany).

Adult Dosage.—Min., gr. v; av., x; max., xx.

Method of Administration.—℞ Extracti krameriæ, gr. viii, pilulæ no. 12.

Sig.—Pill every three or four hours.

Uses.—Intestinal astringent.

Extractum Malti (chiefly diastase, maltose, and extractives).

Dosage.—6 months, ʒi–ii; 18 months, ʒii–iv; 3 years, ʒiv; 5 years, ʒi. Adult, min., ʒi; av., iv; max., ʒi.

Method of Administration.—℞ Extracti malti, ʒiv.

Sig.—Tablespoonful, t.i.d.p.c.

Uses.—Starch digestant and nutrient.

Extractum Nucis Vomicæ.

Adult Dosage.—Min., gr. ⅛; av., ¼; max., ½.

Method of Administration.—℞ Extracti nucis vomicæ, gr. ¼, pilulæ no. 30.

Sig.—Pill, t.i.d. Maximum in 24 hours, gr. ii.

Uses.—Bitter stomachic and tonic; general stimulant.

Extractum Opii (20 per cent. morphine).

Adult Dosage.—Min., gr. ¼; av., ½; max., ii.

Method of Administration.—℞ Extracti opii, gr. ss, pilulæ no. 6.

Sig.—One pill (morphine gr. 1/10) every three to four hours.

Uses.—Nervous sedative and analgesic. See Morphine.

Extractum Parathyroideæ.

Adult Dosage.—Av., gr. ⅙.

Method of Administration.—℞ Extracti parathyroideæ, gr. ⅙, pulveres no. 21.

Sig.—Powder t.i.d.

Uses.—Alterative.

Toxic Action.—Muscular tremor.

Extractum Physostigmatis (about 2 per cent. of alkaloids).

Adult Dosage.—Min., gr. 1/16; av., ⅛; max., ¼.

Method of Administration.—℞ Extracti physostigmatis, gr. ⅛, pilulæ no. 6.

Sig.—A pill once or twice daily. "Gr. i–iv are used in tetanus" (Potter).

Physiologic Action and Uses.—Physostigmine or eserine is the antagonist of atropine. It increases the excitability of autonomic or parasympathetic nerve endings; causes myosis and contraction of the ciliary muscle (spasm of accommodation) with resulting relaxation of the capsule of the lens and increased sphericity of the latter and diminution of intraocular tension; increases the secretion of tears, saliva, sweat, and the bronchial secretion; contracts the bronchial, gastro-intestinal and vesical muscles; increases the excitability of the nerve endings supplying striped or voluntary muscles; also renders more excitable the motor cortical centres, tending to convulsions; slows the heart; deepens respirations; depresses the vagus and the action of the spinal cord.

Toxic Action.—Muscular weakness and tremor, loss of reflex action, nausea, salivation, vomiting, severe intestinal colic, purging, sweating, myosis, bradycardia, dyspnœa, motor paralysis.

Eserine in the eye may produce a feeling of great tension in the eye, headache, and nausea.

Extractum Pini Canadensis (Hemlock Spruce).

Extractum Rhamni Purshianæ (Extractum Cascaræ Sagradæ).

Dosage.—18 months, gr. ss; 3 years, gr. i–ii; 5 years, gr. iii–v. Adult, min., gr. v; av., viii; max., x.

Method of Administration.—℞ Extracti cascaræ sagradæ, gr. v, pilulæ no. 24.

Sig.—A pill twice daily, or two pills at bedtime.

Physiologic Action and Uses.—Laxative; acts chiefly on the lower bowel; the dose can be gradually reduced without secondary constipation following.

Extractum Rhei (1 gram represents 2 grams of rhubarb).

Adult Dosage.—Min., gr. i; av., iv; max., x.

Physiologic Action and Uses.—Cathartic; bitter stomachic tonic; somewhat astringent in its after-effects; acts chiefly on the lower bowel.

Extractum Viburni Prunifolii.

Adult Dosage.—Av., gr. viii.

Uses.—Uterine sedative.

Fellis Bovis Extractum (Oxgall Extract).

Adult Dosage.—Av., gr. iss.

Method of Administration.—℞ Extracti fellis bovis, gr. iss, pilulæ vel capsulæ (hardened with formaline), no. 12.

Sig.—One pill, t.i.d.p.c.

Uses.—Cholagogue; laxative; intestinal antiseptic; aids in the absorption of fats.

Fennel Oil; Oleum Fœniculi (nearly insoluble in water; soluble in alcohol).

Adult Dosage.—Min., ♏ii; av., iii; max., v.

Uses.—Carminative.

Fennel Water; Aqua Fœniculi (oil 2, distilled water 1000).

Adult Dosage.—Min., ℥i; av., iv; max., ℥i.

Uses.—Carminative.

Ferratin; Sodii Ferrialbuminas.

Adult Dosage.—Av., gr. viiss.

Method of Administration.—℞ Sodii ferrialbuminatis, gr. viiss, tabellæ vel capsulæ, no. 60.

Sig.—Tablet, three or four times daily, p.c.

The powder may be flavored with chocolate and saccharin.

Uses.—Hæmatic.

Toxic Action.—Indigestion, nausea, vomiting, constipation, sense of tension or fulness in the head. Iron is contraindicated in plethora, hemorrhage, and fever.

Ferri Albuminas.

Dosage.—6 months, gr. xx; 18 months, gr. xxx; 3 years, ℥ss; 5 years, ℥i. Adult, min., ℥i; max., ii.

Method of Administration.—℞ Ferri albuminatis, ℥ii (℥i per dose); acidi hydrochlorici diluti, ℥i (♏iv per dose); aquæ, q.s. ad, ℥viii.

M. Sig.—One tablespoonful, t.i.d.p.c.

Uses.—Hæmatic.

Ferri et Aloes Pilulæ.

Adult Dosage.—Min., 1; av., 2; max., 5.

Method of Administration.—℞ Pilulæ aloes et ferri, no. 24.

Sig.—One pill, t.i.d.p.c.

Uses.—Purgative; hæmatic; emmenagogue.

Ferri et Ammonii Acetatis Liquor; Mistura Bashami (Tr. ferric chl. 4, dil. acetic ac. 6, sol. of ammon. acetate 50, aromatic elixir 12, glycerine 12, water to 100).

Dosage.—3 years, ℥ss; 5 years, ℥i. Adult, min., ℥ii; av., iv; max., ℥i.

Method of Administration.—℞ Misturæ Bashami recentis præparati, ℥iv.

Sig.—One or two tablespoonfuls in a tumbler of water, every three to four hours.

Uses.—Diuretic; diaphoretic; hæmatic.

Ferri et Ammonii Citras (very soluble in water; insoluble in alcohol).

Adult Dosage.—Min., gr. ii; av., v; max., x.

Method of Administration.—℞ Ferri et ammonii citratis, ℥ii ℈ii (gr. v per dose); syrupi limonis, ℥iv; vini xerici, q.s. ad, ℥viii.

M. Sig.—Two drams, three or four times a day, p. c.

For hypodermic injection into the skin of the back or thighs, 1 c.c. of a 10 per cent. aqueous neutral solution, sterilized, one daily, or every other day, using a platinum hypodermic needle. (Forchheimer.)

Uses.—Hæmatinic; practically non-astringent.

Ferri Carbonas Saccharatus ($FeCO_3$, preserved with sugar).

Adult Dosage.—Min., gr. v; av., x; max., xxx.

Method of Administration.—℞ Ferri carbonatis saccharati, gr. v, pulveres, in charta cerata, no. 60.

Sig.—A powder, three or four times daily, p.c. The dose may be gradually increased to gr. xxx.

Uses.—Hæmatinic.

Ferri Carbonatis Pilulæ (Blaudii).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years, gr. ii; 5 years, gr. ii. Adult, min., gr. v; max., vii.

Method of Administration.—℞ Pilulæ ferri carbonatis (Blaudii), pulveris, recentis præparati, gr. v.

Dispense in gelatine capsules hardened with formalin (Sahli's glutoid capsules, grade ii of hardness), capsulæ no. 50.

Sig.—One pill t.i.d.p.c., increased by one pill each week until four or five pills are taken t.i.d.

Uses.—Hæmatinic.

Ferri Chloridi Liquor ($FeCl_3$, about 10.5 per cent. in water).

Adult Dosage.—Min., ♏i; av., iss; max., iii; well diluted.

Uses.—Local astringent.

Ferri Chloridi Tinctura ($FeCl_3$).

Dosage.—6 months, gt. i; 18 months, gtt. iii; 3 years, gtt. v; 5 years, gtt. x–xv. Adult, min., ♏x; max., xxx.

Method of Administration.—℞ Tincturæ ferri chloridi, ℥i; glycerini, ℥i; syrupi aurantii vel limonis, q.s. ad, ℥iv.

M. Sig.—One or two drams in water, t.i.d.p.c., sucked through a glass tube, followed by rinsing and brushing of the teeth.

Uses.—Astringent; hæmatic. As a throat application: tr. ferri chloridi, glycerine, and water, equal parts.

Ferri Citratis Vinum, see Ferri et Ammonii Citras, above.

Ferri Hydroxidum, $Fe(OH)_3$ (sol. ferric sulphate 36 per cent. 100, ammonia water 138, water to 300 c.c.).

Adult Dosage.—Min., ℥i; max., ℥iv.

Method of Administration.—Prepare fresh, and give one teaspoonful in water frequently.

Uses.—Arsenic antidote.

Ferri Hydroxidum cum Magnesii Oxido.

Method of Administration.—Made by mixing, when needed, the following two preparations.

1. Ferric sulphate solution (36 per cent.), 40 c.c. in water, 125 c.c.

2. Magnesium oxide, 10 grams, rubbed up with water, 750 c.c. in a bottle of 1000 c.c. capacity.

Give ℥iv, frequently repeated.

Uses.—Arsenic antidote (the best).

Ferri Iodidi Pilulæ (FeI_2).

Adult Dosage.—1 to 2 pills.

Method of Administration.—℞ Pilulæ ferri iodidi, no. 60.

Sig.—Two pills, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Iodidi Syrupus (FeI_2).

Dosage.—6 months, gtt. iii; 18 months, gtt. vi; 3 years, gtt. x; 5 years, gtt. xx–xxx. Adult, min., ℥ss; max., i.

Method of Administration.—℞ Syrupi ferri iodidi, ℥ii.

Sig.—Half a dram, in half a glass of water, t.i.d.p.c., sucked through a glass tube.

Uses.—Hæmatic; alterative.

Ferri Lactas (soluble in 40 of water; freely soluble

in solutions of alkali citrates; almost insoluble in alcohol); $Fe(C_3H_5O_3)_2+3H_2O$.

Adult Dosage.—gr. i; av., v; max., x.

Method of Administration.—℞ Ferri lactatis, ʒi ϑi (gr. v per dose); potassii citratis, ʒi ϑi; syrupi limonis, ʒiii; aquæ, q.s. ad, ʒviii.

M. Sig.—Tablespoonful, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Laxans Mistura.

Method of Administration.—℞ Ferri sulphatis, gr. ii; magnesii sulphatis, ʒi; acidi sulphurici diluti, ♏iii; spiritus chloroformi, ♏xx; aquæ menthæ piperitæ, *q.s.* ad, ʒi.

M. Sig.—One ounce, t.i.d.

Ferri Malas, see Ferri Pomatum, Extractum.

Uses.—Hæmatic.

Ferri Oxidum Saccharatum (Eisenzucker).

Adult Dosage.—Av., gr. iii.

Method of Administration.—℞ Ferri oxidi saccharati, gr. iii, tabellæ no. 30.

Sig.—Tablet, t.i.d.p.c., crushed with the teeth before swallowing.

Uses.—Hæmatic.

Ferri Peptonas.

Adult Dosage.—Min., gr. v; max., x.

Method of Administration.—℞ Ferri peptonatis, gr. v–x, capsulæ no. 60.

Sig.—Capsule t.i.d.p.c.

Uses.—Hæmatic.

Ferri Peptonati Liquor, N. F.

Adult Dosage.—Av., ʒii.

Method of Administration.—℞ Liquoris ferri peptonati N. F., ʒviii.

Sig.—Two teaspoonfuls, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Peptonati et Mangani Liquor, N. F.

Adult Dosage.—Av., ʒii.

Method of Administration.—℞ Liquoris ferri peptonati et mangani, N. F., ʒviii.

Sig.—Two teaspoonfuls, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Perchloridi Tinctura ($FeCl_3$).

Dosage.—6 months, gt. i; 18 months, gtt. iii; 3 years, gtt. v; 5 years, gtt. x–xv. Adult, min., ♏x; max., xxx.

Method of Administration.—℞ Tincturae ferri chloridi, ʒi; glycerini, ʒi; syrupi aurantii vel limonis, *q.s.* ad, ʒiv.

M. Sig.—One or two drams, in water, t.i.d.p.c., sucked through a glass tube, followed by rinsing and brushing of the teeth.

Uses.—Astringent; hæmatinic. As a throat application, tr. ferri chloridi, glycerine, and water, equal parts.

Ferri Phosphas Solubilis.

Adult Dosage.—Min., gr. i; av., iv; max., vi.

Method of Administration.—℞ Ferri phosphatis solubilis, ʒii, gr. viii (gr. iv ad ʒi); syrupi aurantii, ʒii; aquæ, *q.s.* ad, ʒiv.

M. Sig.—One dram, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Pomata Tinctura, N. F.

Adult Dosage.—Av., ʒi.

Method of Administration.—℞ Tincturæ ferri pomatæ, N. F., ʒiv.

Sig.—One teaspoonful, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Pomatum Extractum, N. F.

Adult Dosage.—Av., gr. x.

Method of Administration.—℞ Extracti ferri pomati, gr. x, pilulæ vel capsulæ no. 60.

Sig.—One, t.i.d.p.c.

Uses.—Hæmatic.

Ferri et Potassii Tartras (very soluble in water; insoluble in alcohol).

Adult Dosage.—Min., gr. ii; av., v; max., x.

Method of Administration.—℞ Ferri et potassii tartratis, ʒii ϑii (gr. v per dose); syrupi limonis, ʒiv; vini xerici, *q.s.* ad, ʒviii.

M. Sig.—Two drams, three or four times a day, p.c.

Uses.—Hæmatic.

Ferri Pyrophosphas Solubilis.

Dosage.—3 years, gr. i–ii; 5 years, gr. ii–iii. Adult, av., gr. v.

Method of Administration.—℞ Ferri pyrophosphatis solubilis, ʒii, ϑii (gr. v per dose), syrupi limonis, ʒii; aquæ, *q.s.* ad, ʒiv.

M. Sig.—One dram t.i.d.p.c.

Uses.—Hæmatic.

Ferri, Quininæ et Strychninæ Phosphatum, Elixir.

Dosage.—Adult, min., ʒss; av., i; max., ii.

Method of Administration.—℞ Elixiris ferri, quininæ, et strychninæ phosphati, ʒiv.

Sig.—Teaspoonful, in half a tumbler of water, t.i.d.p.c.

Uses.—Tonic, hæmatic.

Ferri, Quininæ et Strychininæ Phosphatum, Syrupus.

Dosage.—Adult, min., ʒss; av., i; max., ii.

Method of Administration.—℞ Syrupi ferri, quininæ, et strychninæ phosphati, ʒiv.

Sig.—Teaspoonful in half a tumbler of water, t.i.d.p.c.

Uses.—Tonic; hæmatic.

Ferri Sesquichloridi Liquor ($FeCl_3$, about 10.5 per cent. in water).

Adult Dosage.—Min., ♏i; av., iss; max., iii; well diluted.

Uses.—Local astringent.

Ferri Subsulphatis Liquor (Monsel's Solution).

Adult Dosage.—Min., ♏i; av., iii; max., v; well diluted.

Uses.—Local styptic and astringent.

Ferri Sulphas: $FeSO_4+7H_2O$ (soluble in 1.4 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. i; av., iii; max., v.

Method of Administration.—℞ Ferri sulphatis, ʒii, ϑii (gr. v per dram); glycerini, ʒi; aquæ, q.s. ad ʒiv.

M. Sig.—One dram, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Sulphas Exsiccatus.

Adult Dosage.—Min., gr. ss; av., ii; max., iii.

Method of Administration.—℞ Ferri sulphatis exsiccati, gr. ii, pilulæ no. 30.

Sig.—Pill, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Vinum Amarum; Bitter Wine of Iron (soluble iron and quinine citrate 5, tr. aurantii dulcis 6, syrup 30, white wine to 100).

Dosage.—6 months, ʒss; 18 months, ʒss; 3 years, ʒi; 5 years, ʒi. Adult, min., ʒi; av., ii; max., iv.

Method of Administration.—℞ Vini ferri amari, ʒviii.

Sig.—Two drams, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Vinum Citratis (iron and ammonium citrate 4 per cent., in tr. sweet orange peel, syrup, and white wine).

Dosage.—6 months, ʒss; 18 months, ʒss; 3 years, ʒi; 5 years, ʒi. Adult, min., ʒi; av., ii; max., iv.

Method of Administration.—℞ Vini ferri, ʒviii.

Sig.—Two drams, t.i.d.p.c.

Uses.—Hæmatic.

Ferri Vitellinum Syntheticum; Ovoferrin.

Adult Dosage.—Min., ʒii; max., iv.

Method of Administration.—℞ Ovoferrin, ʒviii.

Sig.—Tablespoonful in water, t.i.d.p.c.

Uses.—Hæmatinic.

Ferrum Albuminatum (Ferri Albuminas).

Dosage.—6 months, gr. xx; 18 months, gr. xxx; 3 years, ʒss; 5 years, ʒi. Adult, min., ʒi; max., ii.

Method of Administration.—℞ Ferri albuminatis, ʒii; acidi hydrochlorici diluti, ʒi; aquæ, *q.s.* ad, ʒviii.

M. Sig.—One tablespoonful, t.i.d.p.c.

Uses.—Hæmatic.

Ferrum Peptonatum (Ferri Peptonas).

Adult Dosage.—Min., gr. v; max., x.

Method of Administration.—℞ Ferri peptonatis, gr. v–x, capsulæ no. 60.

Sig.—Capsule t.i.d.p.c.

Uses.—Hæmatic.

Ferrum Reductum, Fe (Metallic iron in fine powder).

Dosage.—6 months, gr. ½; 18 months, gr. ½; 3 years, gr. ¾; 5 years, gr. i. Adult, min., gr. i; av., ii; max., vi.

Method of Administration.—℞ Ferri reducti, gr. ii, pulveres, capsulæ, vel pilulæ, no. 60.

Sig.—One, t.i.d.a.c., gradually increased to three, t.i.d.

Physiologic Action and Uses.—Iron is essential to metabolism and growth. It stimulates the hæmatopoietic organs and increases the production of hæmoglobin. The inorganic preparations are more efficient than the organic, because of the difficulty with which the latter are decomposed. To demonstrate the presence of available or ionizable iron, add hæmatoxylin, when a dark violet color will result.—Macallum

Fibrolysin; Liquor Thiosinaminæ Sodio-Salicylatis (15 per cent. or gr. 2¼ per c.c.): $(NH_2.CS.NHCH_2.CH{:}CH_2)C_6H_4(OH)(COONa)$.

Adult Dosage.—Ay., 2.3 cc.

Method of Administration.—Subcutaneously, intramuscularly, or intravenously, every one, two, or three days. The dose may gradually be increased to gr. xl of fibrolysin.

Physiologic Action and Uses.—To promote the absorption of scar tissue; contraindicated in tuberculosis.

Toxic Action.—Digestive disturbance, lassitude, fever.

Filix-Mas (Oleoresina Aspidii).

Dosage.—3 years, gr. x–xv; 5 years, gr. xx–xxx. Adult, min., gr. xv; av., xxx; max., lx.

Method of Administration.—℞ Oleoresinæ aspidii, ʒi.

Shake well and div. in caps. 8.

Sig.—Four capsules (uncapped), with half a glass of hot water, at 9 A.M., and four capsules (uncapped), with hot water at 10 A.M., preceded by a thorough emptying of the bowels, and followed, at 12 M., by a non-oily purge, as described under Tapeworm, Part 1.

Uses.—Anthelmintic; tenicide.

Toxic Action.—Vomiting, purging, acute abdominal pain; great weakness, spasms in the extremities; sometimes convulsions, stupor, coma, collapse, sometimes deafness and blindness, temporary or permanent (due to optic atrophy), jaundice, rarely tetany.

Flaxseed (Linseed) Tea; Infusum Lini.

Method of Administration.—Linseed, ʒiii; licorice-root, ʒi; boiling water, ℥x.

Infused for four hours and strained. Dose indefinite.

Uses.—Demulcent; expectorant; diuretic.

Fluidextractum Adonis Vernalis.—See Adonis Vernalis, Fluidextractum.

Fluidextractum Apocyni.—See Apocyni, Fluidextractum.

Fluidextractum Belladonnæ Radicis.—See Belladonnæ Radicis, Fluidextractum.

Fluidextractum Buchu.—See Buchu, Fluidextractum.

Fluidextractum Calumbæ.—See Calumbæ, Fluidextractum.

Fluidextractum Cannabis Indicæ.—See Cannabis Indicæ, Fluidextractum.

Fluidextractum Cascaræ Sagradæ.—See Cascaræ Sagradæ, Fluidextractum.

Fluidextractum Cascaræ Sagradæ Aromaticum.—See Cascaræ Sagradæ, Fluidextractum Aromaticum.

Fluidextractum Chiratæ.—See Chiratæ, Fluidextractum.

Fluidextractum Cimicifugæ.—See Cimicifugæ, Fluidextractum.

Fluidextractum Cinchonæ.—See Cinchonæ, Fluidextractum.

Fluidextractum Colchici Seminis.—See Colchici Seminis, Fluidextractum.

Fluidextractum Condurango.—See Condurango, Fluidextractum.

Fluidextractum Conii.—See Conii, Fluidextractum.

Fluidextractum Convallariæ.—See Convallariæ, Fluidextractum.

Fluidextractum Coto Bark.—See Coto Bark Fluidextractum.

Fluidextractum Digitalis.—See Digitalis Fluidextractum.

Fluidextractum Eriodictyi (Yerba Santa).

Adult Dosage.—Min., gr. v; av., xv; max., xxx.

Uses.—Expectorant; combined with glycyrrhiza to disguise the taste of quinine.

Fluidextractum Ergotæ.—See Ergotæ Fluidextractum.

Fluidextractum Eucalypti.—See Eucalypti Fluidextractum.

Fluidextractum Euonymi.—See Euonymi, Fluidextractum.

Fluidextractum Gelsemii.

Adult Dosage.—Min., ♏ss; av., i; max., iii.

Method of Administration.—℞ Fluidextracti gelsemii, ʒi.

Sig.—One or two drops in water, every four hours, very gradually increased up to five, ten, or fifteen drops, never more than twenty drops. Discontinue if double vision occurs.—Sachs.

Physiologic Action and Uses.—Nervous sedative; antineuralgic (contraindicated if the heart is weak).

Fluidextractum Gentianæ.

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti gentianæ, ʒi.

Sig.—Fifteen drops in water, t.i.d.a.c.

Uses.—Simple bitter stomachic.

Fluidextractum Glycyrrhizæ.

Adult Dosage.—Min., ♏x; av., xxx; max., ʒi.

Uses.—Flavor; demulcent; expectorant.

Fluidextractum Gossypii Corticis (Cotton Root Bark).

Adult Dosage.—Av., ♏xxx.

Method of Administration.—℞ Fluidextracti gossypii corticis, N.F., ʒii.

Sig.—♏ xxx in water, t.i.d.

Uses.—Supposed emmenagogue and oxytocic.

Fluidextractum Granati.

Adult Dosage.—Min., ♏x; av., xxx; max., lx.

Method of Administration.—℞ Fluidextracti granati, ʒss.

Sig.—ʒss–i in water, preceded and followed in a few hours by a brisk cathartic.

Uses.—Anthelmintic.

Fluidextractum Grindeliæ.

Adult Dosage.—Min., ♏x; av., xxx; max., lx.

Method of Administration.—℞ Fluidextracti grindeliæ, ʒii.

Sig.—One-half to one teaspoonful, stirred in sweetened water or milk, every three or four hours.

Used locally for ivy poisoning in the strength of 1:9 of water.

Uses.—Broncho-pulmonary sedative; diuretic.

Fluidextractum Guaranæ (contains caffeine and theobromine).

Adult Dosage.—Min., ♏xv; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti guaranæ, ℥i.

Sig.—Twenty to thirty minims in water, every two to three hours, as required.

Uses.—Antineuralgic (used in migraine).

Fluidextractum Hamamelidis Foliorum (Witch Hazel).

Adult Dosage.—Min., ♏xv; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti hamamelidis foliorum, ℥i.

Sig.—Thirty to sixty drops in water, five times a day.

Uses.—Astringent; hæmostatic.

Toxic Action.—Throbbing pain in the head.

Fluidextractum Hoang-Nan.

Adult Dosage.—Min., ♏v; max., xxx.

Method of Administration.—℞ Fluidextracti hoang-nan.

Sig.—Five to thirty drops in water, t.i.d.

Uses.—Used in leprosy, *q.v.*, Part 1.

Fluidextractum Humuli (Hops).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti humuli, ℥ii.

Sig.—Fifteen to thirty drops in water, t.i.d.

Uses.—Bitter stomachic; feeble hypnotic.

Fluidextractum Hydrastis.

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti hydrastis, ℥i.

Sig.—Thirty drops, well diluted in water or milk, two, three, or four times a day.

In menorrhagia, it may be given for one week before, and also during the flow.

For systemic hemorrhage it may be given every hour for four or five doses.

Physiologic Action and Uses.—Systemic hæmostatic; stomachic; uterine stimulant and vaso-constrictor; exerts a peripheral stimulating action on the uterus; causes vaso-constriction and rise of blood-pressure by stimulation of the vasomotor centres and peripheral action on the blood-vessels.

Fluidextractum Ipecacuanhæ.

Dosage.—As an expectorant, ♏ss–i–ii, every two to four hours, in water. As an emetic, ♏x–xx–xxx, in water.

Physiologic Action and Uses.—Stimulating expectorant; emetic (acts reflexly); diaphoretic; stimulates the stomach and liver.

Fluidextractum Jaborandi (Pilocarpi).

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti pilocarpi, ℥ss.

Sig.—♏xxx in water, at night. (Contraindicated if the heart is weak).

Physiologic Action and Uses.—Diaphoretic; sialagogue; promotes the absorption of inflammatory exudate.

Fluidextractum Krameriæ (contains tannin).

Adult Dosage.—Min., ♏v; av., xv; max., xx.

Method of Administration.—℞ Fluidextracti krameriæ, ℥i.

Sig.—Fifteen to twenty drops in water, three or four times daily.

Uses.—Astringent (contains tannin).

Fluidextractum Lobeliæ (Indian Tobacco).

Adult Dosage.—Min., ♏i; av., iiss; max., xv. (?).

Physiologic Action and Uses.—Sedative expectorant; diaphoretic; diuretic; nervous sedative; relieves bronchial spasm by depressing the vagus nerve terminals in the lungs; stimulates the respiratory centre. A dangerous drug, resembling nicotine.

Toxic Action.—Vomiting, collapse.

Fluidextractum Pareiræ.

Adult Dosage.—Min., ♏x; av., xxx; max., ℥i.

Method of Administration.—℞ Fluidextracti pareiræ, ℥ii.

Sig.—Half to one teaspoonful in plenty of water, three or four times a day.

Uses.—Bitter tonic; diuretic; laxative.

Fluidextractum Pilocarpi.

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti pilocarpi, ℥ss.

Sig.—♏xxx in water, at night. (Contraindicated if the heart is weak.)

Physiologic Action and Uses.—Diaphoretic; sialagogue; promotes the absorption of inflammatory exudate.

Fluidextractum Pruni Virginianæ.

Adult Dosage.—Min., ♏xx; av., xxx; max., xl.

Uses.—Bronchial sedative; flavor and vehicle.

Toxic Action.—Cardiac depression.

Fluidextractum Quassiæ.

Adult Dosage.—Min., ♏v; av., x; max., xxx.

Method of Administration.—℞ Fluidextracti quassiæ, ℥i.

Sig.—Ten drops in water, t.i.d. a.c.

Physiologic Action and Uses.—Simple bitter stomachic; contains no tannin; may therefore be prescribed with iron.

Fluidextractum Rhamni Purshianæ.—See Cascaræ Sagradæ, Fluidextractum.

Fluidextractum Rhamni Purshianæ Aromaticum.—See Cascaræ Sagradæ, Fluidextractum Aromaticum.

Fluidextractum Rhei.

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti rhei, ℥i.

Sig.—Fifteen to thirty drops, in water, at bedtime.

Physiologic Action and Uses.—Stomachic; laxative, acting chiefly on the lower bowel.

Fluidextractum Rhoïs Aromaticæ (Sweet Sumach).

Dosage.—18 months, ♏v; 3 years, ♏x; 5 years, ♏x. Adult, min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti rhoïs aromaticæ, ℥i.

Sig.—Fifteen drops in sweetened water, three or four times daily (for children over six years of age).

Physiologic Action and Uses.—Urinary astringent; recommended for enuresis.

Fluidextractum Sabali (Saw Palmetto).

Adult Dosage.—Min., ♏xv; max., lx.

Method of Administration.—℞ Fluidextracti sabali.

Sig.—Fifteen to sixty drops in water, three or four times a day.

Uses.—Diuretic.

Fluidextractum Salviæ (Sage).

Adult Dosage.—Min., ♏xv; max., lx.

Method of Administration.—℞ Fluidextracti salviæ, ℥i.

Sig.—Fifteen to sixty drops in water, t.i.d.

Uses.—Anhidrotic.

Fluidextractum Senecionis, N.F.

Adult Dosage.—Min., ℥ss; max., i.

Method of Administration.—℞ Fluidextracti senecionis, ℥i.

Sig.—One-half to one dram in water, t.i.d.

Uses.—Hæmostatic.

Fluidextractum Senegæ (contains saponin).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti senegæ, ℥ii.

Sig.—Five to ten drops in water, every two to three hours.

Uses.—Stimulating expectorant; diuretic; diaphoretic.

Fluidextractum Sennæ.

Adult Dosage.—Min., ♏x; av., xxx; max., ʒi.

Method of Administration.—℞ Fluidextracti sennæ, ʒi.

Sig.—Thirty drops in water, at bedtime.

Physiologic Action and Uses.—Cathartic; acts in five to eight hours, chiefly on the lower bowel.

Fluidextractum Spigeliæ.

Dosage.—3 years, ♏x–xx; 5 years, ♏xxx. Adult, min., ʒss; av., i; max., ii.

Method of Administration.—℞ Fluidextracti spigeliæ; fluidextracti sennæ, aa, ʒss.

M. Sig.—One teaspoonful in water, for a child; two teaspoonfuls for an adult, every two hours, for three doses.

Uses.—Anthelmintic for ascarides.

Toxic Action.—Vertigo, amblyopia, mydriasis, convulsions.

Fluidextractum Sumbul.

Adult Dosage.—Min., ♏x; av., xxx; max., ʒi.

Method of Administration.—℞ Fluidextracti sumbul, ʒi.

Sig.—Thirty drops, in water, t.i.d.

Uses.—Antispasmodic; nerve tonic.

Fluidextractum Thujæ.

Adult Dosage.—Av., ♏xxx.

Method of Administration.—℞ Fluidextracti thujæ, ʒi.

Sig.—♏v, in water, t.i.d., for the removal of warts, together with local application.

Fluidextractum Tritici (Couch Grass).

Adult Dosage.—Min., ʒi; av., iiss; max., ʒi.

Method of Administration.—℞ Fluidextracti tritici, ʒiv.

Sig.—Two or three teaspoonfuls, with plenty of water, every three or four hours.

Uses.—Diuretic; urinary sedative.

Fluidextractum Uvæ Ursi.

Adult Dosage.—Min., ♏x; av., xxx; max., ʒi.

Method of Administration.—℞ Fluidextracti uvæ ursi, ʒi.

Sig.—Half a teaspoonful, with plenty of water, three or four times a day.

Physiologic Action and Uses.—Slightly antiseptic diuretic; contains the glucoside, arbutin, which is split up in the kidney into sugar and the antiseptic hydrochinone.

Fluidextractum Valerianæ.

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti valerianæ, ʒi.

Sig.—Thirty drops in water every two to four hours.

Uses.—Antispasmodic; central nervous depressant.

Fluidextractum Veratri.

Adult Dosage.—Min., ♏i; av., iss; max., iv.

Method of Administration.—℞ Fluidextracti veratri, ʒi.

Sig.—One or two drops in water, as required.

Physiologic Action and Uses.—Cardiac and nervous sedative in fevers; increases excitability of voluntary muscle with the occurrence of contracture or slow relaxation following stimulation; exerts same action on heart-muscle, causing slowing; may also stimulate vagus centre; antipyretic by action on heat-regulating centre; lowers blood-pressure.

Fluidextractum Viburni Prunifolii.

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti viburni prunifolii, ʒi.

Sig.—Thirty drops in water, three or four times a day.

Uses.—Uterine sedative.

Fluidextractum Zeæ (Corn Silk).

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Fluidextracti zeæ, ʒii.

Sig.—One-half to one teaspoonful, with plenty of water, every three or four hours.

Uses.—Diuretic; urinary sedative.

Fluidextractum Zingiberis (Ginger).

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti zingiberis, ʒss.

Sig.—Fifteen drops in hot water every two hours.

Uses.—Carminative; stimulant; flavor.

Fœniculi Aqua; Fennel Water (oil 2, distilled water 1000).

Adult Dosage.—Min., ʒi; av., iv; max., ʒi.

Uses.—Carminative.

Fœniculi Oleum; Fennel Oil (nearly insoluble in water; soluble in alcohol).

Adult Dosage.—Min., ♏ii; av., iii; max., v.

Uses.—Carminative.

Formaldehydi Liquor; Formalin (HCHO about 40 per cent. in methyl alcohol and water).

Method of Using.—To disinfect rooms, unfold and suspend heavy clothing, etc., make the room air-tight, and use 20–32 ounces of formalin, poured upon 8 to 10 ounces of potassium permanganate in a large wash-bowl on the floor, for every 1000 cubic feet of air space. No fire should be in the room, as the gas is slightly inflammable. The temperature of the room, however, should not be below 60° F., or the relative humidity below 65 per cent. Keep the room sealed for twelve to twenty-four hours.

As a local anhidrotic: 1 to 10 per cent. solution in alcohol.

Physiologic Action and Uses.—Astringent; disinfectant; local anhidrotic. Ten parts of glycerine may be added to formalin to prevent polymerization.

Toxic Action.—Nausea, vomiting, quick respiration, narcosis, coma.

Formalin, see above.

Formalini Trochisci (gr. ⅛), made with "glycogelatine" or "fruit paste."

Uses.—Throat antiseptic.

Formin. See Hexamethylenamina.

Fowler's Solution; Liquor Potassii Arsenitis.

Dosage.—6 months, gt. ss; 18 months, gt. i; 3 years, gtt. ii; 5 years, gtt. ii–v. Adult, min., ♏ii; av., iii; max., vi+.

Method of Administration.—℞ Liquoris potassii arsenitis, ʒss.

Sig.—Two to three drops, well diluted in water, t.i.d.p.c., gradually increased by one drop every one, two, or three days, up to ten to fifteen, or even 25 drops, t.i.d., even to a child of six years. Should toxic symptoms occur, stop the drug for three or four days, and begin again with smaller doses. The maximum dose may be taken for weeks or months, in the absence of toxic symptoms.

Physiologic Action and Uses.—Alterative; tonic; stomachic; inhibits oxidation and stimulates anabolism; stimulates the hæmatopoietic organs.

Toxic Action.—See under Arseni Trioxidum.

Fuller's Lotion.

Method of Preparation.—℞ Sodii carbonatis, ʒvi; tincturæ opii, ʒi; glycerini, ʒii; aquæ, ʒix.

M. Sig.—Apply warm.

Uses.—Local analgesic.

Furunculin (Yeast Powder).

Uses.—Anti-furuncular.

Galbanum.

Adult Dosage.—Min., gr. x; max., xx.

Method of Administration.—℞ Galbani, ʒii ℈ii

(gr. x per dose); mucilaginis acaciæ, ℥ii; aquæ, *q.s.* ad, ℥iv.

Misce et fiat emulsum.

Sig.—Dessertspoonful every two to four hours. (It may be prescribed in pill form.)

Uses.—Stimulant; expectorant; antispasmodic.

Gallæ et Opii, Unguentum.

Method of Preparation.—℞ Pulveris gallæ, ℥iss; pulveris opii, gr. xlviii; petrolati mollis, ℥i.

Uses.—Astringent; anodyne.

Gallæ Unguentum (Nutgall, 20 per cent.).

Uses.—Astringent.

Gallicum Acidum (soluble in 87 of water, 4.6 of alcohol, or 10 of glycerine).

Adult Dosage.—Min., gr. v; av., xv; max., xx.

Method of Administration.—℞ Acidi gallici, gr. xv. Mitte talis pulveres, capsular, sive tabellæ, no 12.

Sig.—One, three or four times daily.

Uses.—Astringent; hæmostatic.

Gambir Pulvis (Catechu).

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Pulveris catechu, gr. xx, pulveres no. 12.

Sig.—One powder, three or four times daily.

Uses.—Intestinal astringent (containing tannic acid).

Gambir Tinctura Composita (Gambir 5, cinnamon 2½, diluted alcohol to 100).

Adult Dosage.—Min., ℥ss; av., i; max., iii.

Method of Administration.—℞ Tincturæ catechu compositæ ℥ii.

Sig.—Teaspoonful, three or four times daily.

As a gargle, ℥ss ad aquam Oi.

Uses.—Astringent (containing tannic acid).

Gambir Trochisci (nearly gr. i of gambir).

Uses.—Astringent (containing tannic acid).

Garlic Infusion; Infusum Allii (two or three bulbs, chopped up, and boiled in one quart of water or milk, and strained).

Method of Administration.—Inject one-third high into the colon on successive days.

Uses.—Anthelmintic.

Garlic Syrup; Syrupus Allii (Garlic 20 per cent., in sweetened dilute acetic acid; active principle allyl sulphide, $(C_3H_5)_2S$.

Dosage.—5 years, ℥i. Adult, min., ℥i; max., ℥iv.

Method of Administration.—℞ Syrupi alii, ℥ii.

Sig.—One to four teaspoonfuls, according to age, t.i.d.

Uses.—Irritant expectorant; anthelmintic; nervous sedative.

Toxic Action.—Gastric irritation, flatulence, hemorrhoids, headache and fever.

Gaultheriæ Oleum; Oil of Wintergreen (Methylis Salicylas).

Dosage.—6 months, gt. i; 18 months, gtt. ii–iii; 3 years, gtt. iii; 5 years, gtt. iii–v. Adult, min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Olei gaultheriæ, ℥i.

Sig.—Twelve to twenty drops, well diluted, in sweetened water or milk, every two to four hours.

It may be prescribed in formalin hardened capsules.

For external application and absorption: either pure, or diluted with lanolin (10 per cent. ung.), or an oil.

Physiologic Action and Uses.—Antirheumatic; antipyretic; local anodyne; flavor; very irritating to the stomach; readily absorbed through the skin.

Gelatinum (Merck's Sterilized).

Method of Administration.—Two ounces of a 10 per cent. flavored solution or jelly, by mouth, t.i.d.

Hypodermically, 2 per cent., in normal saline solution, 200 to 250 c.c., or per rectum, every day or every other day.

The following is a method of preparing and sterilizing gelatine: "Take 5 gm. of common salt, one litre of distilled water, 100 gm. of gelatine. Bring the water to 80° C., and slowly stir in the gelatine until it is all in solution. Remove the solution from the stove, cool it to 40° C., and add to it the white of an egg. Stir for several minutes, and then put the flask on the stove and boil the fluid. The white of egg coagulates and clears the fluid. Filter through gauze and then through paper. Place the fluid in test-tubes, each of which will contain 10 c.c., and insert a cotton plug in the mouth of each tube. Sterilize by putting the tubes in a steam sterilizer fifteen minutes on two successive days. When you wish to use a tube, place it in a cup of hot water until the gelatine liquefies. Pour the gelatine in a sterilized glass, and draw it up into a sterilized syringe. When kept several weeks, the tubes dry out." Sailer's modification of Carnot's solution. (Da Costa.)

Physiologic Action and Uses.—Nutrient; hæmostatic; increases the coagulability of the blood.

Gelsemii Fluidextractum.

Adult Dosage.—Min., ♏ss; av., i; max., iii.

Method of Administration.—℞ Fluidextracti gelsemii, ℥i.

Sig.—One or two drops in water every four hours, very gradually increased up to 5, 10, or 15 drops, never more than 20 drops. Discontinue if double vision occurs. (Sachs.)

Physiologic Action and Uses.—Nervous sedative; antineuralgic (contraindicated if the heart is weak).

Toxic Action.—Vertigo, diplopia, heaviness and drooping of the eyelids, dilated pupils, muscular weakness, slow, feeble heart, slow respiration, sweating, anæsthesia, dropped jaw.

Gelsemii Tinctura.

Adult Dosage.—Min., ♏iv; av., x; max., xx.

Method of Administration.—℞ Tincturæ gelsemii, ℥ss.

Sig.—Four drops in water every three to four hours. Starr gives, for neuralgia, ten drops every three hours, increased by one drop at each dose until the patient perceives a "heaviness of the upper eyelids and a difficulty in opening the eyes." This dose, he says, may be continued for several days.

Physiologic Action and Uses.—Nervous sedative; antineuralgic (contraindicated if the heart is weak.)

Gentianæ Extractum.

Dosage.—3 years, gr. ¼–½; 5 years, gr. ss–i. Adult, min., gr. i; av., iv; max., x.

Method of Administration.—℞ Extracti gentianæ, gr. iv, pilulæ no. 30.

Sig.—Pill, t.i.d.p.c.

Uses.—Stomachic; bitter tonic; contains tannin in small amount.

Gentianæ Fluidextractum.

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti gentianæ, ℥i.

Sig.—Fifteen drops in water, t.i.d.a.c.

Uses.—Simple bitter stomachic.

Gentianæ Infusum compositum (gentian 10, bitter orange peel 2½, coriander 2½, alcohol 40, water to 320).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Infusi gentianæ compositi, ℥viii.

Sig.—One or two tablespoonfuls, t.i.d.a.c.

Uses.—Simple stomachic bitter; contains tannin in small amount.

Gentianæ Tinctura Composita (gentian 10, bitter orange peel 4, cardamom 1, alcohol and water to 100).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Tincturæ gentianæ compositæ, ℥iv.

Sig.—Teaspoonful, t.i.d.a.c.

Uses.—Simple stomachic bitter; contains tannin in small amount.

Glandulæ Mammæ Dessicatæ (Dessicated Mammary Gland).

Adult Dosage.—Min., gr. ii; max., vi.

Method of Administration.—℞ Glandulæ mammæ dessicatæ, gr. ii, tabellæ no. 30.

Sig.—One to three tablets, t.i.d.

Uses.—Uterine hæmostatic.

Glandulæ Ovariæ Dessicatæ; Ovarin.

Adult Dosage.—Min., gr. iii; max., v.

Method of Administration.—℞ Glandulæ ovariæ siccæ, gr. v, tabellæ no. 60.

Sig.—Tablet, three or four times a day.

Uses.—Used in the menopause, or ovarian insufficiency.

Glandulæ Pituitariæ Dessicatæ (Anterior Lobe).

Adult Dosage.—Min., gr. i; max., iv.

Method of Administration.—℞ Hypophysis dessicatæ (anterior lobe), gr. i–iv, pulveres vel tabellæ no. 30.

Sig.—One, t.i.d.

Physiologic Action and Uses.—The anterior lobe of the hypophysis cerebri or pituitary body is related to the general growth of the body, and especially of the skeleton. It may possibly be of service in infantilism, obesity associated with impotence, and the later stages of acromegaly.

Glandulæ Pituitariæ Dessicatæ (Posterior Lobe); Hypophysis Sicca.

Adult Dosage.—Min., gr. ss; max., iii.

Method of Administration.—℞ Hypophysis siccæ, gr. ss, capsulæ no. 60.

Sig.—Capsule four times daily. Eight to ten grains per diem may probably be given by mouth. Oral administration, however, is said to be ineffective.

Physiologic Action and Uses.—Uterine, intestinal, and cardio-vascular stimulant; promotes the contractility and increases the tone of involuntary and cardiac muscle; excites the activity of the kidneys and mammary glands; useful in collapse, intestinal paresis, and uterine atony.

Glandulæ Suprarenales Siccæ (about 0.5 per cent. epinephrine).

Adult Dosage.—Min., gr. iii; av., v; max., xx.

Method of Administration.—℞ Glandulæ suprarenalis siccæ, gr. v–xx.

Mitte talis pulveres no. 21.

Sig.—One powder, by mouth, t.i.d.

Gr. ii+, every half hour, to a one-year old, for hæmatemesis. (Holt.)

Uses.—Used in Addison's Disease, and in hæmatemesis.

Glandulæ Thymæ Dessicatæ.

Adult Dosage.—Min., gr. ii; av., iv; max., lxxv.

Method of Administration.—℞ Glandulæ thymæ dessicatæ, gr. iv, tabellæ no. 30.

Sig.—Tablet, t.i.d.

Uses.—Used empirically in infantile marasmus, rickets, hæmophilia, hyperthyroidism, tuberculosis.

Glandulæ Thyroideæ Siccæ; Thyriodeum Siccum.

Dosage.—6 months, gr. ⅛; 18 months, gr. ss; 3 years, gr. ss; 5 years, gr. ss–i. Adult, min., gr. iss; av., v; max., x.

Method of Administration.—℞ Thyroidei sicci, gr. ss–i, tabellæ, capsulæ, vel pulveres, no. 30.

Sig.—One tablet, once to thrice daily, gradually and cautiously increased to three or five tablets, t.i.d., or until the patient is normal or toxic symptoms appear. Then reduce the dose until the proper amount required to maintain the mental and bodily integrity is found. See Cretinism, Myxœdema, and Hypothyroidism, in Part 1.

Physiologic Action and Uses.—Used in hypothyroidism (see Cretinism and Myxœdema, in Part 1); stimulates metabolism, causes an increase in the nitrogen of the urine and a decrease in weight.

Toxic Action.—Rapid heart action, palpitation, nervousness, insomnia, tremors, headache, flushing, sweating, loss of weight, sometimes coryza, anorexia, faintness, dyspnœa, elevation of temperature, pallor, perhaps nausea and vomiting, diarrhœa, neuralgic pains, vertigo, sometimes delirium, sometimes albuminuria or glycosuria.

Glauber's Salt; Sodii Sulphas: $Na_2SO_4+10H_2O$ (soluble in one of water).

Dosage.—6 months, gr. xv–xxx; 18 months, gr. xxx–xlv; 3 years, gr. xl–℥i; 5 years, ℥i. Adult, min., ℥ii; av., iv; max., ℥i.

Method of Administration.—A tablespoonful dissolved in water one hour before breakfast; or a teaspoonful in hot water, two to four times a day, on an empty stomach.

As an enema, two tablespoonfuls ad Oi.

Physiologic Action and Uses.—Saline cathartic; causing purgation by osmosis and interference with the absorption of fluids from the bowel; acts in one to twenty hours.

Glonoini Spiritus (1 per cent. alcoholic solution of nitroglycerin).

Dosage.—6 months, gt. ¼; 18 months, gt. ⅓; 3 years, gt. ½; 5 years, gt. i. Adult, min., ♏ss; av., i; max., ii.

Method of Administration.—℞ Spiritus glonoini, ℥ss.

Sig.—One-half to one drop in water, or dropped on or under the tongue, every half to two to four hours; or one drop three to four times a day, increased by one drop every four or five days, until flushing, headache, palpitation, or buzzing in the ears occurs; then reduce the dose several drops and occasionally increase it tentatively; ♏viii–x may have to be given before the desired physiological effect is produced. Intermit the drug every ten days for five days.

Physiologic Action and Uses.—Vasodilator: peripheral relaxant action upon the muscles of the arterioles; also relaxes spasm of the bronchi, intestines, renal and biliary tracts. The effect lasts about twenty to forty minutes.

Glusidum. See Saccharin.

Glycerini Suppositoria (Sod. carb. gr. ¾, stearic ac., gr. iii, glycerine, gr. xlvi).

Uses.—Intestinal evacuant.

Glycerinum $C_3H_5(OH)_3$.

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—One or two teaspoonfuls in lemonade (in place of sugar), up to two to four ounces daily, for renal colic and pressure pains in nephrolithiasis. As an enema, two tablespoonfuls to the quart.

Uses.—Solvent, sweetening agent, demulcent, emollient, rectal evacuant.

Glyceritum Acidi Carbolici (liquid phenol 20, glycerine 80).

Adult Dosage.—Min., ♏iii; av., v; max., x.

Method of Administration.—℞ Glyceriti acidi carbolici, ℥i.

Sig.—Fifteen minims in two tablespoonfuls of warm water, as a mouth-wash.

Uses.—Antiseptic. (?) Glycerine used as a solvent more or less destroys the antiseptic power of such antiseptics in aqueous solution as phenol, boric acid, thymol, bichloride, etc. (Goodrich).

Glyceritum Acidi Tannici (tannic acid 1, glycerine 4).

Adult Dosage.—Av., ♏xxx.

Method of Administration.—Throat paint. As a gargle or spray: ℥i ad aquam Oi.

Uses.—Astringent; hardening agent for sore nipples.

Glyceritum Amyli (starch 10, water 10, glycerine 80, triturated and heated to a jelly).

Uses.—Emollient; vehicle.

Glyceritum Boroglycerini (boric acid 310, and glycerine 460, evaporated by heat down to 500 grams, and an equal weight of glycerine added).

Uses.—Antiseptic.

Glyceritum Guaiaci (equal parts of glycerine and guaiac).

Adult Dosage.—Min., ♏x; max., lx; for local application to inflamed joints, etc.

Glyceritum Phenolis.—See Glyceritum Acidi Carbolici.

Glycerophosphas Calcii: $CaC_3H_7O_6P$ (soluble in 50 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. ii; max., v.

Method of Administration.—℞ Calcii glycerophosphatis, gr. iv, tabellæ no. 60.

Sig.—Tablet, t.i.d.

Uses.—Tonic; alterative.

Glycerophosphas Sodii (very soluble in water; nearly insoluble in alcohol).

Adult Dosage.—Min., gr. ii; av., iv; max., v.

Method of Administration.—℞ Sodii glycerophosphatis, ℥ii (gr. ss ad ♏i); aquæ, *q.s.* ad, ℥ss.

M. Sig.—Six minims t.i.d.

It may be prescribed in tablet form.

Uses.—Tonic.

Glycerophosphati Elixir Compositum (sod. glycerophos. 4, calc. glycerophos. 1.6, ferric glycerophos. 0.3, soluble manganese glycerophos. 0.2, quinine glycerophos. 0.1, strych. glycerophos. 0.015, lactic acid 1, in comp. spt. cardamom, alcohol, glycerine and water to 100).

Adult Dosage.—Av., ℥ii.

Method of Administration.—℞ Elixiris glycerophosphati compositi, N. F., ℥viii.

Sig.—Two teaspoonfuls, t.i.d.

Uses.—Tonic.

Glycerylis Nitras; Nitroglycerin: $C_3H_5(NO_3)_3$.

Dosage.—6 months, gr. 1/400; 18 months, gr. 1/300; 3 years, gr. 1/200; 5 years, gr. 1/100. Adult, min., gr. 1/100; max., gr. 1/50.

Method of Administration.—℞ Tabellarum trinitrini, gr. 1/100, no. 20.

Sig.—One tablet in water or, best, dissolved on or under the tongue, every two to four hours; or three or four times a day, gradually increased by one tablet every four or five days, until flushing, headache, palpitation, or buzzing in the ears occurs; then reduce the dose several tablets, and occasionally increase it tentatively; gr. 1/50 or even 1/10 may have to be given before the desired physiological effect is produced. Intermit the drug every ten days for five days.

Physiologic Action and Uses.—Vasodilator; peripheral relaxant action upon the musculature of the arterioles; also relaxes spasm of the bronchi, intestines, renal and biliary tracts. The effect of a single dose lasts about twenty to forty minutes.

Glycerylis Nitratis Spiritus (1 per cent. alcoholic solution of nitroglycerin). See Glonoini, Spiritus.

Glycocholas Sodii.

Adult Dosage.—Min., gr. ii; av., v; max., xx.

Method of Administration.—℞ Sodii glycocholatis, gr. v, tabellæ no. 24.

Sig.—Tablet t.i.d.p.c., dissolved in water.

Uses.—Cholagogue; stimulates digestion of fats.

Glycyrrhizæ Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., ℥i.

Uses.—Flavor; demulcent expectorant.

Glycyrrhizæ Mistura Composita; Brown mixture (Ext. glycyr. 3, syrup 5, acacia 3, paregoric 12, vin. antim. 6, spt. æth. nit. 3, water to 100).

Dosage.—6 months, gtt. xv; 18 months, gtt. xx; 3 years, gtt. xxx–xl; 5 years, gtt. xl–℥i. Adult, min., ℥i; av., ℥iss; max., ℥i.

Method of Administration.—℞ Misturæ glycerrhizæ compositæ.

Sig.—Two or four teaspoonfuls, every two hours, or as required for cough.

Uses.—Sedative expectorant.

Glycyrrhizæ Pulvis Compositus; Compound licorice powder (Senna 18, glycyr. 23½, oil of fennel 0.4, washed sulphur 8, sugar 50).

Dosage.—6 months, gr. x; 18 months, gr. x–xx; 3 years, gr. xxx; 5 years, gr. xl–℥i. Adult, min., ℥i; max., ii.

Method of Administration.—℞ Pulveris glycyrrhizæ compositi, ℥i, no. 12.

Sig.—A powder at bedtime.

Uses.—Laxative.

Glycyrrhizæ Syrupus, N. F. (Fluidglycerate of glycyrrhiza, 25 per cent., in syrup).

Adult Dosage.—Av., ℥ii.

Uses.—Flavor.

Gold Chloride; Auri Chloridum, $AuCl_3$ (very soluble in water).

Adult Dosage.—Min., gr. 1/60; max., 1/30.

Method of Administration.—℞ Auri chloridi, gr. ¼; aquæ destillatæ, ℥ii.

M. Sig.—℥i in water, t.i.d.

Uses.—Alterative.

Gold and Sodium Chloride ($AuCl_3NaCl+2H_2O$); very soluble in water).

Adult Dosage.—Min., gr. 1/50; av., 1/10; max., ⅛.

Method of Administration.—℞ Auri et sodii chloridi, gr. ss; aquæ destillatæ, ℥ii.

M. Sig.—℥i in water, t.i.d.

It may also be prescribed in pill form.

Uses.—Alterative.

Gomenol Oil.

Uses.—Used locally in tuberculous cystitis.

Goose-Oil.

Uses.—Nutritive inunction.

Gossypii Cortex; Cotton-Root Bark.

Adult Dosage.—Min., gr. x; av., xxx; max., ℥i.

Method of Administration.—℞ Gossypii corticis ℥iv; aquæ, Oii.

Boil down to a pint.

Sig.—A wineglassful every few hours, or t.i.d.

Uses.—Supposed emmenagogue and oxytocic.

Gossypii Corticis Fluidextractum, N. F.

Adult Dosage.—Av., ♏xxx.

Method of Administration.—℞ Fluidextracti gossypii corticis, N. F., ℥ii.

Sig.—♏xxx in water, t.i.d.

Gossypii Seminis Oleum; Cottonseed Oil.

Dosage.—6 months, gtt. xv; 18 months, gtt. xv–xxx; 3 years, ℥ss–i; 5 years, ℥i. Adult, min., ℥i; av., iv; max., ℥i.

Method of Administration.—℞ Olei gossypii seminis, ℥viii.

Sig.—A teaspoonful to two tablespoonfuls, t.i.d.p.c.

As a laxative, ℥ii–vi, twice daily.

As an enema, 5 to 16 oz. high into the colon.

Uses.—Nutrient; lubricant; emollient; laxative.

Goulard's Extract; Liquor Plumbi Subacetatis (Lead acetate 18, lead oxide 11, distilled water to 100).

Method of Administration.—Diluted 15 to 30 times with water.

Uses.—Astringent and cooling lotion; should not be applied to denuded surfaces.

Granati Decoctum.

Adult Dosage.—Min., ℥iv; max., vi.

Method of Administration.—℞ Granati recentis, ℥xvii; aquæ, ℥xvii.

Boil down to twelve ounces, and strain.

Sig.—℥iv–vi every hour, for two or three doses, preceded and followed in a few hours by a brisk cathartic.

Uses.—Anthelmintic.

Toxic Action.—Weakness of the limbs, giddiness, confusion, nausea, vomiting, purging.

Granati Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., lx.

Method of Administration.—℞ Fluidextracti granati, ℥ss.

Sig.—℥ss–i, in water, preceded and followed in a few hours by a brisk cathartic.

Uses.—Anthelmintic.

Toxic Action.—Weakness of the limbs, giddiness, confusion, nausea, vomiting, purging.

Gray Oil; Oleum Cinereum.

Method of Administration.—℞ Hydrargyri bidestillati, ℥iiss; alboleni, ℥iii; adipis lanæ hydrosi, ℥iss.

Prepare from sterile materials under aseptic conditions, and triturate the mercury with the lanolin for at least two hours.

Dose.—Two to six minims injected intramuscularly every two weeks (see Part 1, under Syphilis).

The Gray Oil or Mercurial Oil described by N. N. R. is a 40 to 50 per cent. preparation. It is directed to be administered once or twice a week, 1 minim being the initial dose, and 2 minims the maximum. "The 'course' should not be continued beyond five or six weeks without an intermission of equal duration." (N. N. R.)

Uses.—Antiluetic.

Gray Powder; Hydrargyrum cum Creta.

Dosage.—6 months, gr. ¼; 18 months, gr. ¼; 3 years, gr. ½; 5 years, gr. ½. Adult, min., gr. iss; av., iv; max., viiss.

Method of Administration.—℞ Hydrargyri cum Creta, gr. ¼–½, pulveres in charta cerata no. 4.

Sig.—One powder every hour for four doses (for children).

Uses.—Cathartic; antiluetic.

Grindeliæ Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., lx.

Method of Administration.—℞ Fluidextracti grindeliæ, ℥ii.

Sig.—One-half to one teaspoonful, stirred in sweetened water or milk, every three or four hours.

Uses.—Broncho-pulmonary sedative; diuretic. Used locally for ivy poisoning in the strength of 1:9 of water.

Gruels. See Cereal Waters.

Guaiacamphol (Camphoric acid ester of guaiacol).

Adult Dosage.—Min., gr. iii; av., v; max., xv.

Method of Administration.—℞ Guaiacamphol, gr. v, pulveres no. 6.

Sig.—Powder at bedtime for three to six nights.

Uses.—Anhidrotic.

Guaiaci Confectio Composita (Chelsea Pensioner).

Adult Dosage.—Min., ℥i; max., ii.

Method of Preparation.—℞ Guaiaci, ℥ss; sulphuris sublimati, ℥iii, gr. xv; magnesii carbonatis, ℥ss; pulveris zingiberis, gr. xv; theriacæ (treacle) vel mellis depurati, ℥iii.

Uses.—Laxative in chronic rheumatism.

Guaiaci Glyceritum (equal parts).

Adult Dosage.—Min., ♏x; max., lx, for local application to inflamed joints, etc.

Guaiaci Tinctura (20 per cent.).

Adult Dosage.—Min., ℥ss; av., i; max., iss.

Method of Administration.—℞ Tincturæ guaiaci; syrupi acaciæ, aa, ℥ii.

M. Sig.—One to two teaspoonfuls in milk, t.i.d.

Uses.—Expectorant; diaphoretic; alterative; purgative.

Toxic Action.—Indigestion, vomiting, purging, headache.

Guaiaci Tinctura Ammoniata (Guaiac, 20, arom. spt. ammon. to 100).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Tincturæ guaiaci ammoniatæ, ℥i.

Sig.—Thirty minims, well diluted in milk, t.i.d.

Uses.—Expectorant; diaphoretic; alterative; purgative.

Guaiaci Trochisci.

Adult Dosage.—Av., gr. iii.

Method of Administration.—℞ Trochisci guaiaci, no. 12.

Sig.—Lozenge every two to four hours.

Uses.—For sore throat.

Guaiacol (methoxy-hydroxy-benzene: $C_6H_4(OH)$, (OCH_3),) soluble in 53 of water; freely soluble in alcohol.

Adult Dosage.—Min., ♏v; av., viii; max., xv.

Method of Administration.—℞ Guaiacolis ℥ss.

Sig.—Two or three drops, in whiskey, well diluted, t.i.d.p.c., increased by one drop daily, up to fifteen to eighteen drops, t.i.d.

It may be dispensed in capsules or pills.

♏xx–l, painted on the skin, causes a prompt fall of temperature, but collapse may occur.

Uses.—Bronchial stimulant and expectorant; antipyretic; local anæsthetic and antiseptic; tonic; intestinal and urinary antiseptic.

Toxic Action.—Resembles phenol poisoning.

Guaiacolis Carbonas; Duotal: $(C_6H_4(OCH_3))_2CO_3$ (insoluble in water; soluble in alcohol, 1:60).

Adult Dosage.—Min., gr. v; av., xv; max., xx.

Method of Administration.—℞ Guaiacolis carbonatis, gr. xv, pulveres vel capsulæ vel trochisci no. 12.

Sig.—One, t.i.d.p.c. The dose may be gradually increased to a maximum of ℥iss per diem. The drug may be administered, if desired, in codliver oil, a bitter tincture, or mucilage of tragacanth.

Uses.—Intestinal antiseptic; bronchial stimulant.

Guaiacum.

Adult Dosage.—Min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Guaiaci, gr. xv, trochisci no. 12.

Sig.—A wafer every two to four hours.

Uses.—Alterative; laxative; diuretic.

Guarana (contains caffeine and theobromine).

Adult Dosage.—Min., gr. xv; av., xxx; max., ℥i.

Method of Administration.—℞ Guaranæ, gr. xxx, pulveres no. 6.

Sig.—A powder once or twice daily, as required.

Uses.—Analgesic; stimulant.

Guaranæ Elixir (contains caffeine and theobromine).

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Elixiris guaranæ ℥ii.

Sig.—One or two teaspoonfuls every four hours, until relieved.

Uses.—Analgesic; stimulant.

Guaranæ et Celerinæ Elixir (supposed to contain caffeine, coca, celery, kola, and viburnum, with aromatics).

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Potassii bromidi, ℥ii (gr. xv per dose); elixiris guaranæ et celerinæ, ℥iv.

M. Sig.—A dessertspoonful in hot water every four hours (Kelly's Dysmenorrhœa Mixture).

Guaranæ Fluidextractum (contains caffeine and theobromine).

Adult Dosage.—Min., ♏xv; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti guaranæ, ℥i.

Sig.—Twenty to thirty minims, in water, every two to three hours, as required.

Uses.—Antineuralgic, used in migraine.

Gum Salt Solution; Seven per cent. of gum acacia in normal salt solution (0.85 per cent.). It is of the same viscosity as the blood and is used as an infusion in preference to normal saline, as being less apt to produce pulmonary œdema.

Gurjuni Balsamum.

Adult Dosage.—Min., ♏x; max., ℥ii.

Method of Administration.—℞ Balsami gurjuni vel dipterocarpi, ♏x, capsulæ no. 30.

Sig.—Capsule, t.i.d., gradually increased. It may also be administered in the form of an emulsion, and also used locally.

Uses.—Used in Leprosy, *q.v.*, Part 1.

Gutta-perchæ Liquor (10 per cent. sol. in chloroform; Traumaticin).

Uses.—Protective application to slight wounds.

Guy's Pill.

Method of Administration.—℞ Pulveris digitalis, gr. i; pulveris scillæ, gr. i; hydrargyri chloridi mitis, gr. i; confectionis rosæ, *q.s.*

Misce et fiat pilula. Mitte talis no. 12.

Sig.—One pill every eight hours.

Physiologic Action and Uses.—Digitalis and squills are cardiac stimulants; calomel is laxative and diuretic.

Gynocardas Sodii.

Adult Dosage.—Min., gr. ss; av., iii; max., xlv.

Method of Administration.—℞ Sodii gynocardatis, gr. ss, capsulæ no. 12.

Sig.—One capsule t.i.d.p.c. Gradually increase the dose to gr. iii–xlv, t.i.d., or gr. iii–v, in capsule, ten to twenty times daily.

Uses.—Anti-leprosy.

Gynocardiæ Oleum; Oleum Chaulmoogræ.

Adult Dosage.—Min., ♏v; max., x.

Method of Administration.—℞ Olei gynocardiæ, ℥ii.

Sig.—Three to five drops in milk (or in capsule), t.i.d.a.c., increased by one or two drops every three to five days, up to even 150 or more drops t.i.d.; together with daily inunctions of the oil, 25 to 50 per cent. in oil or lard, lasting one to two hours.

Physiologic Action and Uses.—For leprosy, *q.v.*, Part 1.

Hæmogallolum (reduced or deoxidized Hæmoglobin).

Adult Dosage.—Min., gr. iv; max., x.

Method of Administration.—℞ Hæmogalloli, gr. iv; sacchari albi, *q.s.*

Mitte talis pulveres no. 60.

Sig.—Powder, t.i.d., one-half hour a.c.

It may also be dispensed in tablet form.

Uses.—Hæmatinic.

Hæmolum (reduced or deoxidized Hæmoglobin).

Adult Dosage.—Min., gr. ii; max., x.

Method of Administration.—℞ Hæmoli, gr. vi; sacchari albi, q.s.

Mitte talis pulveres no. 60.

Sig.—Powder, t.i.d., one-half hour a.c.

Uses.—Hæmatinic.

Hamamelidis Aqua; Extractum Hamamelidis Destillatum.

Adult Dosage.—Min., ℥i; av., ii; max., iii.

Uses.—Astringent; hæmostatic.

Toxic Action.—Throbbing pain in the head.

Hamamelidis Foliorum Fluidextractum.

Adult Dosage.—Min., ♏xv; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti hamamelidis foliorum, ℥i.

Sig.—Thirty to sixty drops in water, five times a day.

Uses.—Astringent; hæmostatic.

Hedeomæ Oleum; Oil of Pennyroyal.

Adult Dosage.—Min., ♏i; av., iii; max., v.

Method of Administration.—℞ Olei hedeomæ, ♏iii, capsulæ no. 12.

Sig.—One capsule, t.i.d.p.c.

It may be prescribed on sugar.

Uses.—Stimulant; carminative; emmenagogue.

Toxic Action.—Narcosis.

Hedonal; Methylpropylcarbinol Urethane: $CH_3CH_2CH_2CH(CH_3)O.CO.NH_2$.

Adult Dosage.—Min., gr. xv; max., xxx.

Method of Administration.—℞ Hedonal, gr. xv, pulveres, capsulæ, vel tabellæ no. 4.

Sig.—One at bedtime, repeated if necessary.

Uses.—Nervous sedative; hypnotic.

Helmitol; Hexamethylenaminæ Methylencitras: $C_7H_8O_8(CH_2)_6N_4$; soluble in about 10 of water.

Adult Dosage.—Min., gr. v; av., x; max., xxx.

Method of Administration.—℞ Helmitol, gr. v–x, pulveres vel tabellæ no. 24.

Sig.—One, t.i.d. It may be given up to ℥i–ii daily.

Physiologic Action and Uses.—Urinary antiseptic. The claim that formaldehyde is liberated in slightly alkaline as well as acid media is not substantiated by the Council on Pharm. and Chem. of the A.M.A.

Heroin Hydrochloride; Diacetylmorphinæ Hydrochloridum (soluble in 2 of water).

Dosage.—18 months, gr. 1/100; 3 years, gr. 1/50; 5 years, gr. 1/30. Adult, min., gr. 1/30; av., 1/20; max., 1/8.

Method of Administration.—℞ Diacetylmorphinæ hydrochloridi, gr. 1/20, tabellæ no. 5.

Sig.—One tablet, as required for the relief of an irritable cough (three or four times a day, if need be).

Physiologic Action and Uses.—Respiratory sedative; said to be more depressant on the respiratory centre than morphine or codeine and not more efficacious.

Hexamethylenamina; Urotropin: $(CH_2)_6N_4$ (soluble in 1.5 of water and in 12.5 of alcohol).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years, gr. i–ii; 5 years, gr. ii–v. Adult, min., gr. v; av., x; max., xv.

Method of Administration.—℞ Hexamethylenaminæ, gr. v-x, pulveres, vel tabellæ, vel capsulæ no. 24.

Sig.—A powder, in solution, in water, t.i.d. It may be given up to ℥i daily, for adults. If sodium acid phosphate is given to render the urine acid, hexamethylenamine should not be taken for several hours later.

Physiologic Action and Uses.—Urinary antiseptic; liberates formaldehyde only in an acid medium (not otherwise).

Toxic Action.—Indigestion, abdominal pain, diarrhœa, strangury, albuminuria, hæmaturia; hæmoglobinuria; headache, tinnitus, measly rash.

Hexamethylenaminæ Methylencitras; Helmitol. See Helmitol.

Hexamethylenaminæ Salicylas; Saliformin: $(CH_2)_6N_4C_6H_4OH.COOH$ (readily soluble in water or alcohol).

Adult Dosage.—Min., gr. v; max., xxx.

Method of Administration.—℞ Hexamethylenaminæ salicylatis, gr. lxxx (gr. v ad ℥i); elixiris simplicis, ℥ii.

M. Sig.—One or two teaspoonfuls every four hours.

It may be prescribed in tablet form.

Uses —Urinary antiseptic.

Hippuras Ammonii.

Adult Dosage.—Min., gr. iv; max., xv.

Method of Administration.—℞ Ammonii hippuratis, gr. x, capsulæ 24.

Sig.—One, t.i.d.

Uses.—Solvent of urates.

Hoang-Nan Fluidextractum.

Adult Dosage.—Min., ♏v; max., xxx.

Method of Administration.—℞ Fluidextracti Hoang-Nan.

Sig.—Five to thirty drops in water, t.i.d.

Uses.—Used in Leprosy, *q.v.*, Part 1.

Hoang-Nan Pulvis.

Adult Dosage.—Min., gr. iii; max., v.

Method of Administration.—℞ Pulveris hoang-nan, gr. iii, pilulæ no. 60.

Sig.—One pill, t.i.d.

Uses.—Used in Leprosy, *q.v.*, Part 1.

Hoffman's Anodyne; Spiritus Ætheris Compositus (ether 32½, alcohol 65, etherial oil 2½).

Dosage.—6 months, gtt. ii; 18 months, gtt. iii–v; 3 years, gtt. v; 5 years, gtt. v–x. Adult, min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Spiritus ætheris compositi, ℥i.

Sig.—One teaspoonful in a wineglass of water, as required, or every one to three hours.

Uses.—Anodyne; carminative; stimulant.

Holocainæ Hydrochloridum (the hydrochloride of phenetidyl-acetphenetidin: $CH_3C:(NC_6H_4OC_2H_5)(NH.C_6H_4OC_2H_5).HCl$. Soluble in 50 parts of water.

Method of Administration.—One per cent. solution as an anæsthetic collyrium. The solution should be prepared in a porcelain vessel instead of glass.

Homatropinæ Hydrobromidum: $C_{16}H_{21}O_3NHBr$; soluble in 6 of water. Homatropin is an ester of tropine with mandelic acid.

Adult Dosage.—Min., gr. 1/150; av., 1/120; max., 1/100.

Method of Administration.—One or two drops of a 1 to 2 per cent. solution in the eye, as a mydriatic and cycloplegic.

Uses.—Transient mydriatic and cycloplegic.

Honey; Mel (about 40 per cent. levulose, 35 per cent. dextrose, and 3 per cent. saccharose.)

Hops. See Humulus, below.

Horst's Eye Water; Collyrium Astringens Luteum. —See Collyrium Astringens Luteum.

Humuli Fluidextractum.

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti humuli, ℥ii.

Sig.—Fifteen to thirty drops in water, t.i.d.

Uses.—Bitter stomachic; feeble hypnotic.

Humuli Infusum (℥ss of hops ad aquam Oi).

Adult Dosage.—Min., ℥i; max., iv.

Method of Administration.—℞ Infusi humuli, Oi.

Sig.—One to four ounces, t.i.d.

Uses.—Bitter stomachic; feeble hypnotic.

Humuli Tinctura.

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—In aquam, ad ℥i–ii, as a vehicle for other hypnotics.

Uses.—Bitter stomachic; feeble hypnotic.

Hydrargyri Ammoniati Unguentum ($HgNH_2Cl$, 1 to 12 per cent.).

Method of Administration.—℞ Hydrargyri ammoniati, gr. xlviii; adipis lanæ hydrosi; petrolati mollis, aa, ℥ss.

Sig.—For local application, as directed.

Uses.—Antiseptic emollient and local stimulant.

Hydrargyri Chloridum Corrosivum; $HgCl_2$.

Dosage.—6 months, gr. 1/200; 18 months, 1/100; 3 years, gr. 1/100; 5 years, gr. 1/75. Adult, min., gr. 1/64; av., 1/20; max., 1/8.

Method of Administration.—℞ Hydrargyri bichloridi, gr. 1/32, tabellæ no. 60.

Sig.—One tablet, t.i.d., well diluted.

Physiologic Action and Uses.—Tonic in small doses, increasing growth and weight and the formation of red blood-cells; antiluetic; antiseptic in solution 1 : 20,000–4000–1000.

Toxic Action.—Vomiting, diarrhœa, frequent foul-smelling and bloody stools, nervous symptoms, weakness, nephritis, anuria, salivation, gingivitis. (See under Hydrargyri Cyandium.)

Hydrargyri Chloridum Mite; Calomel: HgCl.

Dosage.—6 months, gr. 1/10; 18 months, gr. 1/6; 3 years, gr. ¼; 5 years, gr. ¼. Adult, min., gr. ii; av., v; max., viii.

Method of Administration.—℞ Hydrargyri chloridi mitis, gr. i (for infants); sacchari albi, *q.s.*

Misce et divide in pulveres no. x.

Sig.—One powder every half to one hour until effectual, or until the stools turn green; usually no more than one grain for infants. Follow after about six hours or the next morning by a saline.

℞ Hydrargyri chloridi mitis, gr. ¼, tabellæ no. 12 (for adults).

Sig.—One tablet every fifteen minutes, or four tablets every hour (or gr. ii–viii in a single dose at bedtime, followed by a saline, one hour before breakfast.

Physiologic Action and Uses.—Antiluetic; hydragogue purgative, acting (in one to twenty hours) on both the large and small bowel, by interfering with the absorption of fluids. The green color of the stools is due partly to sulphide of mercury and not altogether to biliverdin; diuretic, acting the same as potassium citrate, *q.v.*; intestinal antiseptic; gastric sedative in small doses.

Toxic Action.—Abdominal pain, loose stools, salivation, gingivitis, malaise. (See under Hydrargyri Cyanidum.)

Hydrargyri Cyanidum, $Hg(CN)_2$; soluble in 12.8 of water.

Adult Dosage.—Min., gr. 1/16; max., ⅛.

Method of Administration.—℞ Hydrargyri cyanidi, gr. ½, tabellæ no. 60.

Sig.—One tablet, well diluted, t.i.d.

Physiologic Action and Uses.—Antiluetic; local antiseptic: 1–4000–2000, may be applied to the eye or mucous membranes.

Toxic Action.—Acute poisoning: nausea, vomiting, gastralgia, purging, nephritis, suppression of urine, bloody diarrhœa, collapse.

Chronic poisoning: (hydrargyrism) colicky diarrhœa, soreness of the gums, salivation, fetid breath, gingivitis, stomatitis, metallic taste in the mouth, anorexia, indigestion, fever, emaciation, erythema, headache, neuralgia, insomnia, muscular tremor, coryza, diarrhœa, bloody stools, anæmia, albuminuria, polyneuritis, convulsions, coma.

Hydrargyri Emplastrum (mercury 30, oleate of mercury 1, hydrous wool-fat 10, lead plaster 59).

Uses.—Antiseptic.

Hydrargyri Iodidum Flavum; Protiodide: HgI (almost insoluble in water).

Adult Dosage.—Min., gr. 1/10; av., 1/6; max., 1/3–ii.

Method of Administration.—℞ Hydrargyri iodidi flavi, gr. 1/6, pilulæ no. 30.

Sig.—Pill t.i.d.p.c., increased by gr. 1/8 daily to the limit of tolerance.

In the treatment of syphilis (*q.v.*, Part 1) Keyes prefers the Garnier and Lamoureux granules of green protiodide, gr. 1/4, to the yellow protiodide, gr. 1/3–1/2, because the latter is too irritating to the bowel.

Uses.—Antiluetic; alterative.

Toxic Action.—See under Hydrargyri Cyanidum.

Hydrargyri Iodidum Rubrum; Biniodide, HgI_2, (almost insoluble in water).

Dosage.—6 months, gr. 1/150; 18 months, gr. 1/100; 3 years, gr. 1/60; 5 years, gr. 1/25–1/10. Adult, min., gr. 1/20; max., 1/6.

Method of Administration.—℞ Hydrargyri iodidi rubri, gr. 1/20, pilulæ no. 30.

Sig.—Pill, t.i.d.p.c.

Uses.—Antiluetic; alterative; antiseptic.

Toxic Action.—See under Hydrargyri Cyanidum.

Hydrargyri Linimentum.

Uses.—Used locally for tuberculous peritonitis.

Hydrargyri Massa; Blue Mass; Blue Pill (mercury 33, licorice 10, althæa 15, glycerine 9, honey of rose 33).

Dosage.—3 years, gr. i; 5 years, gr. i–ii. Adult, min., gr. ii; av., v; max., xv.

Method of Administration.—℞ Massæ hydrargyri, gr. v, pilulæ no. 6.

Sig.—Pill once a day, at bedtime.

Uses.—Antiluetic; cathartic.

Hydrargyri Nitratis Liquor: $Hg(NO_3)_2$, 60 per cent.

Uses.—Caustic.

Hydrargyri Nitratis Unguentum; Citrine Ointment (mercury 7, dissolved in nitric acid 17½, lard 76).

Uses.—Antiseptic.

Hydrargyri Oleatum (yellow oxide, HgO 25, distilled water 25, oleic acid to 100).

Adult Dosage.—Min., gr. 1/12; max., 1/3.

Uses.—Antiluetic; alterative.

Hydrargyri Oxidi Flavi Unguentum (yellow mercuric oxide, HgO, 2 per cent. for the eye; 5 to 10 per cent. for the skin, with equal parts of lanolin and vaseline).

Method of Administration.—℞ Hydrargyri oxidi flavi, gr. i; adipis lanæ hydrosi; petrolati albi, aa, ʒss. M. Sig.—Apply with a wooden toothpick or camel's-hair brush (in conjunctival or corneal ulceration).

Uses.—Antiseptic; local stimulant.

Hydrargyri Oxycyanidum, $Hg(CN)_2HgO$ (soluble in about 80 cf water).

Adult Dosage.—Min., gr. 1/64; av., 1/20; max., 1/8.

Method of Administration.—May be given hypodermically in the same doses as mercuric chloride; said to be less irritating than the latter and more antiseptic.

Physiologic Action and Uses.—Antiluetic; antiseptic in solution of 1 : 5000 or slightly stronger; does not corrode steel instruments.

Hydrargyri Perchloridum. See Hydrargyri Chloridum Corrosivum.

Hydrargyri Salicylas (nearly insoluble in water).

Adult Dosage.—Min., gr. 1/8; av., 1/15; max., ii.

Method of Administration.—℞ Hydrargyri salicylatis, gr. 1/15, pilulæ no. 60.

Sig.—One pill, t.i.d.

For intramuscular injection: ♏x of a well-shaken 10 per cent. suspension in liquid petrolatum, deep into the gluteal muscle every fourth day, increased to every second day, if necessary. Clean needle and syringe thoroughly after each injection.

Uses.—Antiluetic; antiseptic.

Hydrargyri Succinimidum, Hg $((CH_2.CO)_2N)_2$ (freely soluble in water).

Adult Dosage.—Min., gr. 1/6, av. 1/4; max., 1/2.

Method of Administration.—℞ Hydrargyri succinimidi, gr. 1/4, tabellæ no. 30.

Sig.—A tablet, dissolved in water, and injected hypodermically, once daily.

Uses.—Antiluetic; antitubercular.

Hydrargyri Sulphidum Rubrum.

Hydrargyri Tannas.

Adult Dosage.—Min., gr. iv; max., v.

Method of Administration.—℞ Hydrargyri tannatis, gr. v, pilulæ no. 30.

Sig.—Pill, t.i.d.

Uses.—Antiluetic, alterative.

Hydrargyri Unguentum; Mercurial Ointment (mercury 50, lard 25, suet 23, oleate of mercury 2).

Dosage.—6 to 18 months, gr. x-xv-xxx. Adult, Min., ʒss; av., i; max., iv.

Method of Administration.—℞ Unguenti hydrargyri, ʒss–i, capsulæ no. 12.

Sig.—One capsule daily, for inunction (see Syphilis in Part 1).

Uses.—Antiluetic; antiseptic; parasiticide.

Hydrargyri Unguentum Dilutum; Blue Ointment (mercurial ointment 67, petrolatum 33).

Uses.—Antiluetic; antiseptic; parasiticide.

Hydrargyrum Bidestillatum (Dentists' Mercury). See Gray Oil.

Hydrargyrum Bisulphuretum.

Hydrargyrum cum Creta; mercury with chalk; Gray Powder.

Dosage.—6 months, gr. 1/4; 18 months, gr. 1/4; 3 years, gr. 1/2; 5 years, gr. 1/2. Adult, min., gr. iss; av., iv; max., viiss.

Method of Administration.—℞ Hydrargyri cum creta, gr. 1/4–1/2, pulveres in charta cerata no. 4.

Sig.—One powder every hour for four doses (for children).

Uses.—Cathartic; antiluetic.

Hydrargyrum Sozoiodolatum.

Hydrastininæ Hydrochloridum (alkaloid; very soluble in water).

Adult Dosage.—Min., gr. 1/4; av., ss; max., iss.

Method of Administration.—℞ Hydrastininæ hydrochloridi, gr. ss, capsulæ no. 24.

Sig.—Capsule three to four times daily.

It may be administered hypodermically.

Physiologic Action and Uses.—Uterine stimulant; hæmostatic; stomachic; exerts a peripheral exciting action upon the uterus and upon the blood-vessels, and also stimulates the vasomotor centre.

Toxic Action.—Indigestion, constipation, tetanic convulsions, motor depression, medullary, spinal, and cardiac depression.

Hydrastis Extractum.

Adult Dosage.—Av., gr. viii.

Method of Administration.—℞ Extracti hydrastis, gr. viii, capsulæ no. 24.

Sig.—Capsule three to four times daily.

Physiologic Action and Uses.—Uterine stimulant; hæmostatic; stomachic; exerts a peripheral exciting action upon the uterus and upon the blood-vessels, and also stimulates the vasomotor centre.

Toxic Action.—Indigestion, constipation, tetanic convulsions, motor depression, medullary, spinal, and cardiac depression.

Hydrastis Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti hydrastis, ʒi.

Sig.—Thirty drops, well diluted in water or milk, two, three, or four times a day.

In menorrhagia it may be given for one week before and also during the flow. For systemic hemorrhage it may be given every hour for four or five doses.

Physiologic Action and Uses.—Uterine stimulant; hæmostatic; stomachic; exerts a peripheral exciting action upon the uterus and upon the blood-vessels, and also stimulates the vasomotor centre.

Toxic Action.—Indigestion, constipation, tetanic convulsions, motor depression, medullary, spinal, and cardiac depression.

Hydrastis Tinctura.

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Tincturæ hydrastis.

Sig.—One dram in water, prescribed in the same way as the fluid extract.

Physiologic Action and Uses.—Uterine stimulant; hæmostatic; stomachic; exerts a peripheral exciting action upon the uterus and upon the blood-vessels, and also stimulates the vasomotor centre.

Toxic Action.—Indigestion, constipation, tetanic convulsions, motor depression, medullary, spinal, and cardiac depression.

Hydriodici Acidi Syrupus (1 per cent. of HI).

Dosage.—5 years, ♏v–x. Adult, min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Syrupi acidi hydriodici, ℥ii.

Sig.—℥i, well diluted, t.i.d.

Uses.—Alterative; used in coughs.

Hydriodicum Acidum Dilutum (10 per cent. of HI by weight).

Adult Dosage.—Min., ♏v; av., x; max., lx.

Method of Administration.—℞ Acidi hydriodici diluti, ℥i.

Sig.—Ten drops in a tablespoonful of water, t.i.d.

Uses.—Alterative.

Hydrobromicum Acidum Dilutum (10 per cent. of HBr).

Adult Dosage.—Min., ♏xx; av., ℥i; max., ii.

Method of Administration.—℞ Acidi hydrobromici diluti, ℥ii.

Sig.—℥i, well diluted, every three to four hours.

Uses.—Nervous sedative.

Hydrochloricum Acidum Dilutum (10 per cent. of HCl by weight).

Dosage.—6 months, gt. ¼–½; 18 months, gt. i; 3 years, gtt. ii; 5 years, gtt. iii–v. Adult, min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Acidi hydrochlorici diluti, ℥ii.

Sig.—Twenty drops in half a tumbler of sweetened albumen water, taken through a straw or glass tube, during and one-half to one hour after meals. Rinse the mouth afterwards with soda water.

Uses.—Digestant; antiseptic and antifermentative; astringent; astringent gargle.

Hydrocyanicum Acidum Dilutum (2 per cent. of HCN by weight; keep tightly stoppered in a cool, dark place; it will decompose within a year).

Adult Dosage.—Min., ♏i; av., iss; max., iii, not drops.

Method of Administration.—℞ Acidi hydrocyanici diluti, ♏iv; aquam ad, ℥iv.

M. Sig.—One dram, repeated if necessary.

Uses.—Gastric analgesic and sedative.

Toxic Action.—Palpitation, cardiac depression, dizziness, tinnitus, vomiting, muscular weakness, dyspnœa, salivation, headache; numbness; often insensibility, convulsions or rigidity, and death.

Hydrogenii Dioxidi Liquor (H_2O_2 about 3 per cent.; with a small amount of phosphoric acid to prevent deterioration).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Liquoris hydrogenii dioxidi, ℥ii.

Sig.—Teaspoonful, diluted with four parts of water, t.i.d.

For wounds, dilute one part with four of water.

For mucous membranes, dilute 1:7 as a spray.

Uses.—Local antiseptic (very feeble) and hæmostatic; intestinal antiseptic. The frothing is due to the liberation of gaseous oxygen brought about by the action of an enzyme, "catalase," present in blood, pus and muscle juice.

Hyoscinæ (Scopolaminæ) **Hydrobromidum** (soluble in 1.5 of water and 20 of alcohol. The alkaloid, hyoscin, $C_{17}H_{21}NO_4$, is the tropaic acid ester of scopoline.

Adult Dosage.—Min., gr. 1/200; av., 1/80; max., 1/30.

Method of Administration.—℞ Hyoscinæ hydrobromidi, gr. 1/200–1/80, tabellæ no. 6.

Sig.—A tablet by mouth or hypodermically, several times daily.

Uses.—Cerebral sedative; anodyne; hypnotic; mydriatic.

Toxic Action.—Central respiratory depression, fall of blood-pressure, dryness in the mouth and throat, mydriasis and paralysis of accommodation, hypnosis, delirium, collapse.

Hyoscyami Extractum.

Adult Dosage.—Min., gr. i; av., ii; max., viii.

Method of Administration.—℞ Extracti hyoscyami, gr. i–ii, pilulæ no. 12.

Sig.—Pill, t.i.d.

Uses.—Cerebral sedative; anodyne; hypnotic.

Hyoscyaminæ Hydrobromidum (very soluble in water).

Adult Dosage.—Min., gr. 1/200; av., 1/128; max., 1/100.

Method of Administration.—In tablet form; larger doses for the insane, several times daily, by mouth or hypodermically.

Uses.—Cerebral sedative; anodyne; hypnotic; mydriatic.

Hyoscyami Tinctura.

Dosage.—6 months, gt. ss–i; 18 months, gtt. i–ii; 3 years, gtt. iii; 5 years, gtt. iii–v. Adult, min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Tincturæ hyoscyami, ℥i.

Sig.—Fifteen drops, in water, t.i.d.

Uses.—Cerebral sedative; anodyne; hypnotic.

Hydronaphthol (said to be an impure beta-naphthol).

Adult Dosage.—Min., gr. i; max., iii +.

Method of Administration.—℞ Hydronaphthol, gr. iii, pilulæ (keratin or salol coated) no. 21.

Sig.—One pill, t.i.d.a.c.

Uses.—Intestinal antiseptic.

Hypnal (combination of chloral and antipyrine; soluble in 6 of water).

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Hypnal, gr. xv, pulveres no. 4.

Sig.—A powder in solution, well diluted, best per rectum, every four hours.

Uses.—Analgesic; hypnotic.

Hypophosphis Calcii, $Ca(PH_2O_2)$ (soluble in 6.5 of water).

Adult Dosage.—Min., gr. v; av., viii; max., xv.

Method of Administration.—℞ Calcii, potassii, vel sodii hypophosphitis, ℥ii ℈ii (gr. x per dose); syrupi simplicis, ℥ii; aquæ, *q.s.* ad, ℥iv.

Sig.—Dessertspoonful, t.i.d.

Uses.—Alterative.

Hypophosphis Potassii, KH_2PO_2 (soluble in 0.6 of water).

Adult Dosage.—Min., gr. v; av., viii; max., x.

Method of Administration.—(See above).

Uses.—Alterative.

Hypophosphis Sodii, $NaH_2PO_2+H_2O$ (soluble in one of water; soluble in alcohol).

Adult Dosage.—Min., gr. v; av., xv; max., xxx.

Method of Administration.—(See above).

Uses.—Alterative.

Hypophosphitum Syrupus (Ca., Sod., and Pot.).

Dosage.—6 months, ℥ss; 18 months, ℥¾; 3 years, ℥i; 5 years, ℥i–ii. Adult, min., ℥ii; av., ℥iss; max., iv.

Method of Administration.—℞ Syrupi hypophosphitum, ℥viii.

Sig.—Dessertspoonful, t.i.d.

Uses.—Alterative.

Hypophosphorosum Acidum Dilutum (10 per cent. of H_3PO_2 in water).

Adult Dosage.—Min., ♏v; av., x; max., xx.

Method of Administration.—℞ Acidi hypophosphorosi diluti, ℥ii.

Sig.—Twenty drops in water, t.i.d.

Uses.—Aphrodisiac.

Hypophysis Liquor (Posterior Lobe).

Adult Dosage.—Min., ♏v; max., xv.

Method of Administration.—Used hypodermically. Says H. H. Dale: "When a maximal dose has been given, further doses have practically no effect for a few hours.

Physiologic Action and Uses.—Uterine, intestinal, and cardio-vascular stimulant; promotes the contractility and increases the tone of involuntary and cardiac muscle; excites the activity of the kidneys and mammary glands; useful in collapse, intestinal paresis, and uterine atony.

Hypophysis Sicca (Posterior Lobe).

Adult Dosage.—Min., gr. ss; max., iii.

Method of Administration.—℞ Hypophysis siccæ, gr. ss, capsulæ no. 60.

Sig.—Capsule four times daily.

Eight to ten grains per diem may probably be given by mouth.

Oral administration, however, is said to be ineffective.

Hyposulphis Sodii; Sodii Thiosulphas: $Na_2S_2O_3 + 5H_2O$ (soluble in 0.5 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. v; av., xv; max., xx.

Method of Administration.—℞ Sodii hyposulphitis, ℥v ℈i (gr. xx per dram); aquæ, *q.s.* ad, ℥ii.

M. Sig.—One dram 3 to 4 times a day.

External antiseptic and parasiticide: 10 per cent. lotion or ointment.

Physiologic Action and Uses.—Partly decomposed by the acid of the stomach into sulphurous acid, with the eventual formation of sulphate, which acts as a purgative. Gastric and external antiseptic and parasiticide.

Ichthalbin; Ichthyoli Albuminas.

Dosage.—6 to 18 months, gr. ii–v; 3 to 5 years, gr. x–xv. Adult, min., gr. xv; av., xx; max., xxx.

Method of Administration.—℞ Ichthalbin, gr. xx, tabellæ (chocolate) no. 30.

Sig.—One tablet, t.i.d.

For infants it may be given in gruel. For older children, mixed with scraped chocolate.

Uses.—Intestinal antiseptic; alterative.

Ichthyoli Unguentum (5 to 50 per cent.).

Uses.—Antiphlogistic; antiseptic.

Ichthyolum (Ammonium Sulpho-ichthyolate, $C_{28}H_{36}S_3O_6(NH_4)_2$; contains about 10 per cent, of sulphur).

Adult Dosage.—Min., ♏iii; av., x; max., xxx.

Method of Administration.—℞ Ichthyoli, ♏x, capsulæ no. 30 (hardened with formalin).

Sig.—Capsule, t.i.d.

It may be prescribed in solution in water or peppermint water.

It may be given up to ℥iss daily.

℥i to the quart as a colonic enema.

Uses.—Intestinal antiseptic; alterative.

Infusum Adonis Vernalis.—See Adonis Vernalis, Infusum.

Infusum Alii.—See Alii, Infusum.

Infusum Buchu.—See Buchu, Infusum.

Infusum Calumbæ.—See Calumbæ, Infusum.

Infusum Chiratæ.—See Chiratæ, Infusum.

Infusum Digitalis Recens.—See Digitalis, Infusum.

Infusum Gentianæ Compositum.—See Gentianæ, Infusum Compositum.

Infusum Humuli.—See Humuli, Infusum.

Infusum Juniperi (Juniper berries. ℥i, in boiling water Oi, for one hour, then strained).

Adult Dosage.—℥i-ii.

Method of Administration.—℞ Infusi juniperi, Oi.

Sig.—Two ounces every two hours, with plenty of water, up to one pint in twenty-four hours.

Physiologic Action and Uses.—Irritant diuretic; diaphoretic; contraindicated in acute nephritis.

Infusum Lini; Flaxseed or Linseed Tea (Linseed ℥iii, licorice root ℥i, boiling water ℥x, infused for four hours and strained).

Dosage.—Indefinite.

Uses.—Demulcent; expectorant; diuretic.

Infusum Pareiræ (℥i ad Oi).

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Infusi pareiræ, Oi.

Sig.—One to two ounces, three or four times daily, with plenty of water.

Uses.—Bitter tonic; diuretic; laxative.

Infusum Picis Liquidæ; Liquor Picis Alkalinus, N. F. (Tar 25, pot. hydrox. 12.5, water to 100).

Uses.—Local antiseptic and stimulant.

Infusum Quassiæ (Quassia chips ℥i, cold water ℥x, macerated for half an hour and strained).

Adult Dosage.—Min., ℥i; max., iii.

Method of Administration.—℞ Infusi quassiæ, ℥viii.

Sig.—Two tablespoonfuls to a wineglassful, t.i.d.

For pinworms, ℥i–ii of the chips are macerated in Oi of boiling water and the resulting solution injected high into the bowel.

Uses.—Simple stomachic bitter; anthelmintic.

Infusum Salviæ (Sage infusion).

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Infusi salviæ, Oi.

Sig.—Two tablespoonfuls to a wineglassful, t.i.d.

Uses.—Anhidrotic.

Infusum Scoparii (Broom Tops ℥ss in water Oiss, boiled down to a pint).

Adult Dosage.—Av., ℥ii.

Method of Administration.—℞ Scoparii, ℥iv; aquæ, Oiss.

Boil down to a pint and filter.

Sig.—Two ounces or a wineglassful, frequently, until a pint is taken in twenty-four hours.

Uses.—Diuretic; laxative.

Infusum Senegæ (B. P.).

Adult Dosage.—Min., ℥ss; max., i.

Uses.—Stimulating or nauseant expectorant (due to saponin); diuretic; diaphoretic.

Toxic Action.—Cardio-vascular depression, weakness.

Infusum Tritici; Couch Grass Infusion.

Adult Dosage.—Av., ℥ii.

Method of Administration.—℞ Tritici, ℥i; aquæ, Oiss.

Boil down to a pint, and filter.

Sig.—Two ounces or a wineglassful, frequently, until a pint is taken in twenty-four hours.

Uses.—Diuretic; urinary sedative.

Infusum Uvæ Ursi (℥i in Oi).

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Infusi uvæ ursi, ℥viii.

Sig.—Two tablespoonfuls three to four times daily.

Physiologic Action and Uses.—Diuretic; urinary antiseptic and sedative; contains the glucoside arbutin, which is split up in the kidney into sugar and the antiseptic hydrochinone.

Ingluvinum (a bitter obtained from the gizzard of the fowl; not a digestive ferment).

Adult Dosage.—Min., gr. x; av., xx; max., xxx..

Method of Administration.—℞ Ingluvini, gr. xx, pulveres no. 12.

Sig.—Powder, half an hour before meals.

Uses.—Gastric sedative.

Iodex; Pigm. Iodi, M. and J.

Method of Administration.—Used for gentle

inunction upon inflamed glands or wounds, about every two hours. It is highly praised.

Uses.—Local antiseptic and stimulant.

Iodidum Ammonii, NH_4I (soluble in 0.6 of water).

Adult Dosage.—Min., gr. ii; av., v; max., x.

Method of Administration.—℞ Ammonii iodidi, ʒiv; aquæ destillatæ, ʒiv.

M. Sig.—Two to five drops, well diluted in water or milk, t.i.d.p.c. gradually increased, if required.

Physiologic Action and Uses.—Expectorant; diuretic; discutient; alterative, antiluetic; relieves bronchial spasm, possibly, as suggested by Halsey, by stimulating the thyroid function, which stimulates the chromaffin organs with resulting increase of epinephrin, the latter producing relaxation of the bronchial muscles by stimulation of the sympathetic nerve-endings in the lungs; increases the amount of thyroidin in the thyroid gland.

Toxic Action.—Iodism: coryza, lacrimation, conjunctival injection, sneezing, respiratory catarrh, cough, salivation, sore throat, conjunctivitis, headache, tinnitus, swelling of the salivary glands, localized œdema (of the eyelids, larynx), indigestion, nausea, vomiting, diarrhœa, saline or metallic taste in the mouth, neuralgic pains, anæmia, emaciation, acne, erythema, purpura, etc., mental depression.

Iodidum Calcii: CaI_2.

Adult Dosage.—Min., gr. v; av., viiss; max., xx. Praised as a cough remedy.

Iodidum Potassii, KI (soluble in 0.7 of water) M i (more than one drop) of a saturated solution, contains about gr. i of KI.

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii–iii; 5 years, gr. iii. Adult, min., gr. v; av., viii; max., xx.

Method of Administration.—℞ Potassii iodidi, ʒiv; aquæ destillatæ, ʒiv.

Sig.—Five to eight drops, well diluted in water or milk, t.i.d.p.c., gradually increased even to 20 or 60 drops, t.i.d.

Every week, intermit the drug for four to five days.

Physiologic Action and Uses.—See above.

Toxic Action.—See above.

Iodidum Sodii, NaI (soluble in 0.55 of water, and in 3 of alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii–iii; 5 years, gr. iii. Adult, min., gr. v; av., viii; max., xx.

Method of Administration.—℞ Sodii iodidi, ʒiv; aquæ destillatæ, ʒiv.

Sig.—Five to six drops, well diluted in water or milk, t.i.d.p.c., gradually increased even to 20 to 60 drops t.i.d.

Every week, intermit the drug for four to five days.

Physiologic Action and Uses.—See above.

Toxic Action.—See above.

Iodidum Thymolis; Aristol; Dithymol-di-iodid; $(C_6H_2.CH_3.C_3H_7OI)_2$.

Physiologic Action and Uses.—Antiseptic powder, less efficient than iodoform.

Iodidum Zinci: ZnI_2 (very soluble in water and in alcohol).

Adult Dosage.—Min., gr. ss; av., i; max., ii.

Method of Administration.—In syrup.

Iodi Linimentum.

Iodi Liquor Compositus; Lugol's Solution (iodine: 5, pot. iodi 10, distilled water to 100).

Adult Dosage.—Min., ♏i; av., iii; max., x.

Method of Administration.—℞ Liquoris iodi compositi, ʒss.

Sig.—Three drops, in a wineglassful of water, t.i.d.p.c.

Uses.—Alterative.

Iodi Tinctura (I about 7, KI about 5, alcohol to 100).

Adult Dosage.—Min., ♏i; av., iii; max., v.

Method of Administration.—℞ Tincturæ iodi, ʒss.

Sig.—Three drops, well diluted in water, t.i.d.p.c.

For vomiting, one drop in a teaspoonful of water, every ten to thirty minutes, usually with one drop of carbolic acid.

Uses.—Alterative; gastric sedative; local antiseptic and counter-irritant.

Iodi Tinctura Churchillii.

Composition.—℞ Iodi, gr. lxxv; potassii iodidi, ʒiss; alcoholis, ʒi.

Uses.—Local antiseptic and counter-irritant.

Iodi Trichloridum.

Method of Administration.—℞ Iodi trichloridi, gr. v; aquæ, ʒi. (1 per cent. solution.)

M. Sig.—For local use.

Uses.—Local antiseptic.

Iodi Unguentum (Iodine 4, pot. iodide 4, glycerine 12, benzoinated lard 80).

Method of Preparation.—Pulverize the iodine, then add a little alcohol, and finally the excipient by degrees. Should be prepared as required.

Uses.—Antiseptic and counter-irritant.

Iodine-Petrogen, 5 per cent.

Uses.—Local antiseptic and counter-irritant.

Iodine-Vasogen, 4 to 8 per cent.

Iodipin (Iodized Sesame Oil).

Adult Dosage.—Min., ʒss; max., ii.

Method of Administration.—Of 10 per cent. iodipin, by mouth, in capsules or emulsion, three or four times a day, ʒi–ii. Of 25 per cent. iodipin, hypodermically, once daily, ʒss to iss.

Uses.—Alterative.

Iodized Phenol; Iodum Phenolatum (usually, iodine 1, to crystallized phenol 4).

Uses.—Antiseptic and counter-irritant.

Iodoformi Unguentum (Iodoform 10, lard 90).

Uses.—Antiseptic.

Iodoformum; Triiodomethane: CHI_3.

Adult Dosage.—Min., gr. i; av., iv; max., vi.

Method of Administration.—℞ Iodoformi, gr. iv, pilulæ vel capsulæ no. 30.

Sig.—One, t.i.d.

It may also be dissolved in codliver oil.

Uses.—Alterative; local antiseptic, stimulant and anæsthetic.

Toxic Action.—Restlessness, headache, insomnia, nausea and vomiting, anæsthesia, sometimes unconsciousness, occasionally convulsions, hallucinations, and delusions of persecution, rapid pulse, fever, perhaps collapse, coma, death.

Iodoglycerinum.

Iodolum: Tetraiodopyrrol: C_4I_4NH.

Adult Dosage.—Min., gr. ii; av., iv; max., x.

Method of Administration.—℞ Iodoli, gr. iv pilulæ no. 30.

Sig.—One, t.i.d.p.c.

Uses.—Alterative; antiseptic.

Iodophen; Nosophen; Tetra-iodo-phenolphthalein).

Adult Dosage.—Min., gr. v; max., viii.

Uses.—Antiseptic powder.

Iodothyrin; Thyroidin (Thyroglobulin: split off from thyroid protein by acid hydrolysis).

Adult Dosage.—Min., gr. ss; av., iss; max., v–x.

Method of Administration.—℞ Iodothyrin, gr. ss, tabellæ no. 30.

Sig.—Tablet, t.i.d., gradually and cautiously increased.

See Cretinism, and Myxœdema, Part 1.

Physiologic Action and Uses.—Alterative; not as reliable as thryoid substance (see Thyroideum siccum).

Iodovasogen (4 to 8 per cent.).

Uses.—Antiseptic and counter-irritant.

Iodum:I (soluble in 2950 of water, 12.5 of alcohol; freely soluble in solutions of alkali iodides).

Adult Dosage.—Min., gr. ½₀; av., ¹⁄₁₀; max., ¼.

Method of Administration.—Well diluted.

Uses.—Antiseptic.

Iodum Phenolatum (usually, iodine 1, to phenol 4).

Uses.—Antiseptic and counter-irritant.

Ipecacuanhæ Fluidextractum.

Adult Dosage.—As an expectorant, Min., ♏ss; av., i; max., ii, in water, every two to four hours. As an emetic Min., ♏x; av., xx; max., xxx, (diluted).

Physiologic Action and Uses.—Stimulative expectorant; emetic (acts reflexly); diaphoretic; gastric and hepatic stimulant.

Ipecacuanhæ et Opii Pulvis; Dover's Powder (Ipecac 10, powdered opium 10, sugar of milk 80).

Dosage.—6 months, gr. ⅛–¼; 18 months, gr. ½–¾; 3 years, gr. i–iss; 5 years, gr. ii–iii. Adult, min., gr. v; av., viiss; max., xv.

Method of Administration.—℞ Pulveris ipecacuanhæ et opii, gr. v, pulveres no. 6.

Sig.—One powder as required (about every three to four hours, if necessary).

Uses.—Nervous sedative; sedative expectorant; diaphoretic.

Ipecacuanhæ et Opii Tinctura (Tr. opii deod. 100 evaporated to 80, fl. ext. ipecac 10, diluted alcohol to 100; Dover's powder in liquid form).

Adult Dosage.—Min., ♏v; av., viii; max., xv.

Method of Administration.—℞ Tincturæ ipecacuanhæ et opii.

Sig.—Five to eight drops, in water, as required (about every three to four hours if necessary).

Uses.—Nervous sedative; sedative expectorant; diaphoretic.

Ipecacuanhæ Pulvis (The powdered Brazilian root is richest in the alkaloid, emetine).

Adult Dosage.—As an expectorant, Min., gr. ss; av., i; max., ii, every two hours. As an emetic, Min., gr. x; av., xv; max., xx.

In amœbic dysentery it is given in salol-coated pills, each 0.3 to 4 grams. See Dysentery, Amœbic, Part 1.

Uses.—Expectorant; emetic; amœbicide.

Toxic Action.—Vomiting, purging, hæmoptysis and other hemorrhages.

Ipecacuanhæ Syrupus.

Adult Dosage.—As an expectorant, Min., ♏x; av., xv; max., xx, every one to three hours. As an emetic, Min., ʒii; av., iv; max., vi. To a child, ʒi every ten to fifteen minutes, until vomiting occurs.

Uses.—Expectorant; emetic.

Ipecacuanhæ Vinum.

Adult Dosage.—As an expectorant, Min., ♏x; av., xv; max., xx, every one to two hours. As an emetic, Min., ʒss; av., iv; max., vi. To a child, ʒi every ten to fifteen minutes, until vomiting occurs.

Uses.—Expectorant; emetic.

Iron; Ferrum.—See Ferri.

Iron Somatose (Somatose which is said to contain nearly 90 per cent. of albumose, plus iron). Gr. lxxx correspond to about 1½ ounces of fresh beef.

Uses.—Nutrient tonic.

Irontropon.

Isopral (Trichlor-isopropyl-alcohol; soluble in water and alcohol).

Adult Dosage.—Min., gr. viii; av., x; max., xii.

Method of Administration.—℞ Isopral, gr. x, pulveres no. 4.

Sig.—Powder at bedtime.

Physiologic Action and Uses.—Nervous sedative; hypnotic; acting in fifteen to thirty minutes.

Toxic Action.—Lowering of blood-pressure.

Jaborandi Fluidextractum (Pilocarpi).

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti pilocarpi, ʒss.

Sig.—♏xxx in water, at night (contraindicated if the heart is weak).

Physiologic Action and Uses.—Diaphoretic; sialogogue; promotes absorption of inflammatory exudate.

Jalapæ Pulvis Compositus (Jalap 35, pot. bitartrate 65).

Adult Dosage.—Min., gr. x; av., xxx; max., xlv.

Method of Administration.—℞ Pulveris jalapæ compositi, gr. xxx, no. 6.

Sig.—A powder, in a little water, once or twice a day.

Physiologic Action and Uses.—Hydragogue cathartic; (local irritant; acts on both large and small bowel); diuretic.

Jalapæ Resina.

Dosage.—3 years, gr. ii; 5 years, gr. iii. Adult, min., gr. i; av., ii; max., v.

Method of Administration.—℞ Resinæ jalapæ, gr. ii–iii, pilulæ no. 6.

Sig.—Pill at bedtime.

Physiologic Action and Uses.—Hydragogue cathartic; (local irritant; acts on both large and small bowel); diuretic.

Jambul.

Adult Dosage.—Min., gr. v; max., xxx.

Method of Administration.—℞ Jambul, gr. v–xxx, tabellæ no. 30.

Sig.—One tablet, with or after meals, t.i.d.

Physiologic Action and Uses.—Diminishes glycosuria; prolonged use produces gastric irritation.

Jequiritol (Römer) and Jequiritol Serum (Merck).

Method of Administration.—For the jequirity treatment of old pannus, see Part 6, Eye Diseases, under Conjunctivitis Trachoma tosa Jequiritol comes in four different degrees of strength, which is increased until a reaction is induced.

Juniperi Infusum (Juniper Berries ʒi in boiling water Oi for one hour, then strain).

Adult Dosage.—Min., ʒi; max., ii.

Method of Administration.—℞ Infusi juniperi, Oi.

Sig.—Two ounces, every two hours, with plenty of water, up to one pint in twenty-four hours.

Physiologic Action and Uses.—Irritant diuretic; diaphoretic; contraindicated in acute nephritis, as it may cause urinary suppression.

Toxic Action.—Gastro-enteritis; strangury; priapism; hæmaturia; nephritis; pelvic congestion (abortion), suppression of urine, uræmia.

Juniperi Oleum.

Adult Dosage.—Min., ♏i; av., v; max., xv.

Method of Administration.—℞ Olei juniperi, ♏iii–v, capsulæ no. 6.

Sig.—One capsule, t.i.d., with plenty of water.

Physiologic Action and Uses.—Irritant diuretic; diaphoretic; contraindicated in acute nephritis

Toxic Action.—Gastro-enteritis; strangury; priapism; hæmaturia; nephritis; pelvic congestion (abortion), suppression of urine, uræmia.

Juniperi Spiritus (5 per cent. of the oil).

Adult Dosage.—Min., ʒss; av., i; max., iv.

Method of Administration.—℞ Spiritus juniperi, ʒi.

Sig.—ʒss–i, with plenty of water, t.i.d.

Physiologic Action and Uses.—Irritant diuretic; diaphoretic; contraindicated in acute nephritis.

Toxic Action.—Gastro-enteritis; strangury; priapism; hæmaturia; nephritis; pelvic congestion (abortion), suppression of urine, uræmia.

Juniperi Spiritus Compositus (Juniper oil 8, caraway oil 1, fennel oil 1, alcohol 1400, water to 2000; practically gin.)

Adult Dosage.—Min., ℥i; av., ii; max., iv.

Method of Administration.—℞ Spiritus juniperi compositi.

Sig.—Two teaspoonfuls, well diluted, t.i.d.

Junket: Curds and Whey.

Preparation.—Add a junket tablet or two teaspoonfuls of essence of pepsin or liquid rennet to a pint of fresh lukewarm milk, and allow to stand at room temperature until firmly coagulated.

Kaolinum; Bolus Alba (purified native aluminum silicate).

Adult Dosage.—Av., ℥ss.

Method of Administration.—Kaolin may be given ad libitum in an equal amount of water.

℞ Kaolini; Carbonis ligni, aa.

M. Sig.—Two tablespoonfuls, once to thrice a day.

Physiologic Action and Uses.—Absorbent in diarrhœa or dysentery. It probably acts by absorbing toxines and mechanically carrying bacteria away with it.

Kaolini Cataplasma (glycerine 37½ parts by weight, boric acid 4½ ,thymol ½₀, methyl salicylate ⅛, oil of peppermint ½₀, kaolin 57¾, heated and mixed together).

Uses.—Antiphlogistic poultice, similar to antiphlogistine.

Kephalin; a brain phosphatid.

Uses.—Local hæmostatic.

Kephir (lactic acid and alcoholic fermentation of cow's or mare's milk, caused by a mixture of bacteria and yeasts).

Method of Preparation.—Add one kefir pastille to one quart of cow's milk; keep at a temperature of 21° to 27° C. until the kefir grains rise to the surface; then strain the grains off, and place the milk in well-corked bottles, to continue fermenting.

Kino.

Adult Dosage.—Min., gr. v; av., viii; max., x.

Method of Administration.—℞ Kino gr. viii, pulveres no. 12.

Sig.—Powder three or four times daily.

Uses.—Astringent.

Kino Pulvis Compositus (Kino 15, opium 1, cinnamon 4).

Adult Dosage.—Min., gr. v; av., xv; max., xx.

Method of Administration.—℞ Pulveris kino compositi, gr. xv, pulveres no. 12.

Sig.—One powder, once or twice a day.

Uses.—Astringent.

Kino Tinctura (10 per cent.).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Tincturæ kino.

Sig.—Teaspoonful in water three or four times daily.

Uses.—Astringent.

Koumiss; Lac Fermentatum (Fermented mare's or cow's milk).

Method of Preparation.—To five quarts of clean, fresh milk, at a temperature of 70° F., add and mix one cake of Fleischmann's yeast and five heaping teaspoonfuls of granulated sugar. After standing one-half hour, stir thoroughly, and place in beer bottles with lever corks. Leave in a temperature of 70° for three hours, shaking twice, then in a temperature of 60° to 64° for a week, shaking twice a day; then on ice, shaking once a day until used. In opening a bottle, reverse it in a pitcher, and raise the lever slowly. (S. W. Dana.)

Wolff's method is as follows: "Dissolve a tablespoonful of grape sugar in four ounces of water, and a teaspoonful of Fleischmann's compressed yeast or brewer's yeast (well washed and pressed out) in two ounces of cow's milk. Mix the two solutions in a quart champagne bottle, and fill the latter to within two inches of the top with cow's milk. Cork well, secure the cork with wire, keep in a cold cellar, or ice-chest, at a temperature of 50° F., or less, and agitate twice daily." Use in three to four days; and do not keep longer than four to five days. "Draw it with a champagne tap." If the temperature be higher than 50° F., the fermentation will be of the objectionable acetous variety. (Potter.)

Koumiss may also be made with Kumysgen, with which is supplied by the manufacturers a special bottle and tap. (Potter.)

Physiologic Action and Uses.—Koumiss is nutrient, diuretic, diaphoretic, somnolent, and antifermentative.

Krameriæ Extractum.

Adult Dosage.—Min., gr. v; av., x; max., xx.

Method of Administration.—℞ Extracti krameriæ, gr. x, pilulæ vel capsulæ (intestinal coated), no. 18.

Sig.—One, three to four times daily.

Uses.—Astringent (contains tannin).

Krameriæ Fluidextractum.

Adult Dosage.—Min., ♏v; av., xv; max., xx.

Method of Administration.—℞ Fluidextracti krameriæ, ℥ss.

Sig.—Fifteen drops in water, three to four times daily.

Uses.—Astringent (contains tannin).

Krameriæ Tinctura.

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Tincturæ krameriæ, ℥ii.

Sig.—Teaspoonful in water, three to four times daily.

Uses.—Astringent (contains tannin).

Krameriæ Trochisci (Ext. gr. i).

Uses.—Astringent (contains tannin).

Kreolin. See Creolin.

Lac Fermentatum. See Koumiss.

Lacticum Acidum (75 per cent. by weight).

Dosage.—18 months, gtt. i; 3 years, gtt. ii; 5 years, gtt. iii–v. Adult, min., ♏xx; av., xxx; max., lx.

Method of Administration.—℞ Acidi lactici, (℥ss per dose); syrupi simplicis, aa ℥i.

M. Sig.—℥i in water every two hours.

Uses.—Intestinal antifermentative; local antiseptic; caustic in pure form (dissolves protein and keratin).

Lactobacilline; Lactone (Bacilli Bulgaricus et Paralacticus).

Method of Administration.—℞ Lactobacilline tablets, no. 60.

Sig.—Two to four tablets p.c., followed by a little sweetened food or water.

Physiologic Action and Uses.—Intestinal antifermentative and antiseptic; used also to sterilize typhoid carriers.

Lactophenin (Lactylparaphenetidin; phenacetin in which the acetyl radicle has been replaced by the lactic acid radicle:—$C_6H_4.OC_2H_5.NH.(CH_3CHOH.CO)$.

Adult Dosage.—Min., gr. viii; max., xx.

Method of Administration.—℞ Lactophenii, gr. viii, tabellæ vel pulveres no. 4.

Sig.—One as required (about three times daily, if necessary); no more than gr. xlv–lxxv per diem.

Uses.—Analgesic; hypnotic; antipyretic.

Lanolin; Adeps Lanæ Hydrosus; Hydrous Woolfat of the sheep; (miscible with about twice its weight of water).

Physiologic Action and Uses.—Ointment basis employed when it is desired that the medicament be absorbed by the skin.

Lapacticæ Pilulæ (aloin gr. ¼, strychnine gr. 1/60, ext. belladonna, gr. ⅛, ipecac gr. 1/16).

Adult Dosage.—Min., 1 pill; max., 2 pills.

Method of Administration.—℞ Pilulæ lapacticæ no. 60.

Sig.—One or two pills at bedtime.

Uses.—Laxative.

Lassar's Peeling Paste; ℞ Betanaphthol, ʒss-ii; sulphuris præcipitati, ʒiv; saponis viridis, ʒii; petrolati mollis, ʒii.

Method of Administration.—Apply the paste at night, and leave on for ten to thirty minutes, or until burning begins, then wipe it off with a cloth moistened with olive-oil; wash with soap and warm water, and apply cold cream. Repeat every night, or two or three times daily, until desquamation occurs. The patient should remain indoors during the treatment.

Laudanum; Tinctura Opii.

Dosage.—6 months, ♏½; 18 months, ♏¼-½; 3 years, ♏i; 5 years, ♏ii-iii. Adult, ♏v; av., x; max., xxx. (♏x contains of opium gr. i, or morphine gr.⅛).

Uses.—Nervous sedative; analgesic.

Laurocerasi Aqua, B. P. (Cherry-laurel water, standardized to contain 0.1 per cent. of pure HCN).

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Aquæ laurocerasi, B. P., ʒi.

Sig.—One teaspoonful in water, for the relief of vomiting.

Uses.—Gastric sedative; local antipruritic.

Lavandulæ Oleum; Oil of Lavender.

Dosage.—Min., ♏i; av., iii; max., v.

Uses.—Flavoring and perfume.

Lavandulæ Spiritus (Oil 5, in alcohol 95).

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Uses.—Flavoring agent.

Lavandulæ Tinctura Composita (oil of lavender 8, oil of rosemary 2, Saigon cinnamon 20, cloves 5, nutmeg 10, red saunders 10, alcohol 750, water to 1000).

Adult Dosage.—Min., ʒss; max., ii.

Uses.—Flavor; stimulant; carminative.

Lead Acetate; Sugar of Lead; Plumbi Acetas: $Pb(CH_3COO)_2+3H_2O$ (soluble in 1.4 of water and 38 of alcohol).

Adult Dosage.—Min., gr. ss; av., i; max., v.

Method of Administration.—℞ Plumbi acetatis, gr. i, pilulæ no. 12.

Sig.—One pill, t.i.d.

Physiologic Action and Uses.—Bronchial and intestinal astringent and hæmostatic. A concentrated alcoholic solution is useful in ivy poisoning.

Lead and Opium Wash; Lotio Plumbi et Opii:

℞ Plumbi acetatis, gr. xxvii; tincturæ opii, ʒi; aquam ad, ʒiii.

M. Sig.—For external use.

℞ Liquoris plumbi subacetatis, ʒii-iv; tincturæ opii, ʒss-iv; aquam ad, ʒiv.

M. Sig.—For external use.

Uses.—Astringent, anodyne lotion.

Lead Subacetate Solution; Goulard's Extract; Liquor Plumbi Subacetatis (Lead acetate 18, lead oxide 11, distilled water to 100).

Method of Administration.—Diluted fifteen to thirty times with water.

Physiologic Action and Uses.—Astringent and cooling lotion; should not be applied to denuded surfaces.

Leprolin (Toxin produced by lepra bacilli).

Adult Dosage.—Av., 10 c.c.

Method of Administration.—Injected deep into the muscles, every ten to fourteen days.

Uses.—For leprosy (*q.v.*, Part 1.)

Levulosum; Fruit Sugar: $C_6H_{12}O_6$ or $CH_2OH.CHOH.CHOH.CHOH.CO_2CH_2OH$.

Adult Dosage.—Av., ʒv.

Method of Administration.—T.i.d., by mouth or rectum, in acidosis (*q.v.*, Part 1).

In administering levulose per rectum, dissolve ʒiss, together with sodium chloride ʒii, in a quart of warm water, and introduce slowly.

Uses.—Used in diabetic acidosis.

Limonis Corticis Tinctura (50 per cent.).

Adult Dosage.—Min., ʒss; max., iv.

Uses.—Flavor.

Limonis Oleum.

Adult Dosage.—Min., ♏i; av., iii; max., v.

Uses.—Flavor.

Limonis Syrupus. See Syrupus Acidi Citrici.

Linden Flowers.

Method of Administration.—Tea, hot.

Uses.—Diaphoretic.

Lini Infusum; Linseed or Flaxseed Tea (Linseed ʒiii, Licorice root ʒi, boiling water ℥x, infused for four hours and strained).

Dosage.—Indefinite.

Uses.—Demulcent; expectorant; diuretic.

Linimentum Ammoniæ (Aqua ammoniæ 35, cottonseed oil 57, alcohol 5, oleic acid 3).

Uses.—Rubefacient; counter-irritant.

Linimentum Belladonnæ (camphor 5, dissolved in fl. ext. belladonna root to 100).

Uses.—Local anodyne, etc. See Atropine.

Linimentum Calaminæ:

℞ Calaminæ ʒiv; zinci oxidi ʒiv; acidi carbolici ♏xx-xl; olei olivæ ℥iv; liquoris calcis ℥iv.

M. Sig.—Shake well. For local use.

Uses.—Antiseptic; antipruritic; protective.

Linimentum Calcis; Carron Oil (lime water and linseed or cottonseed oil, aa).

Uses.—Bland, protective emollient.

Linimentum Camphoræ; Camphorated Oil (camphor 20, cottonseed oil 80).

Method of Administration.—This preparation, as found in drug stores, should not be used hypodermically. See Oleum Camphorata.

Uses.—Local Rubefacient.

Linimentum Chloroformi (chloroform 30, soap liniment 70).

Uses.—Rubefacient; anodyne.

Linimentum Chloroformi Compositum (chloroform ℥i, oil of turpentine ℥i, tr. opii ℥ss, tr. aconiti ʒii, soap liniment ℥ii).

Uses.—Rubefacient; anodyne.

Linimentum Hydrargyri.

Uses.—Used locally for tuberculous peritonitis.

Linimentum Iodi.

Linimentum Saponis (white castile soap 6, camphor 4½, oil of rosemary 1, alcohol 72½, water to 100).

Uses.—Mild rubefacient, detergent, and vehicle.

Linimentum Saponis Mollis; Tincture of Green Soap (soft soap 65, oil of lavender 2, alcohol to 100).

Uses.—Detergent.

Linimentum Terebinthinæ (oil of turpentine 35, rosin cerate 65).

Uses.—Rubefacient and counter-irritant.

Linimentum Terebinthinæ Aceticum (oil of turpentine 4, glacial acetic acid 1, camphor liniment 4).

Uses.—Rubefacient and counter-irritant.

Lini Oleum; Linseed Oil, Raw (not boiled oil).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Olei lini, ℥iv.

Sig.—Two tablespoonfuls twice or thrice daily.

Uses.—Laxative; diuretic; expectorant; demulcent; emollient.

Linseed or Flaxseed Tea; Infusum Lini (Linseed ʒiii, licorice root ʒi, boiling water ℥x, infused for four hours and strained).

Dosage.—Indefinite.

Uses.—Demulcent; expectorant; diuretic.

Lipanin.

Adult Dosage.—Min., ℥i; max., iv; t.i.d.

Liquid Albolene; Albolenum Liquidum (Petroleum product).

Method of Administration.—Instilled with a medicine dropper or sprayed with an oil atomizer.

Uses.—Emollient; lubricant.

Liquid Paraffin. See Petrolatum Liquidum.

Liquid Peptonoids (liquid form of Beef Peptonoids, *q. v.*).

Adult Dosage.—Min., ℥ss; max., i. Three to six times daily.

Uses.—Nutrient; 500 gm. furnish 410 calories, of which 125 are due to protein and 285 to carbohydrates.

Liquid Petrolatum; Liquid Paraffin; Mineral Oil.

Adult Dosage.—Min., ℥ss; max., iii.

Method of Administration.—℞ Paraffini liquidi purificati, ℥viii.

Sig.—One-half to three ounces a day, in a single dose on retiring, or in divided doses; or two teaspoonfuls to two tablespoonfuls one-half hour before meals. Do not give it with meals, to avoid indigestion. Remove the taste with warm water, milk or a bite of dry bread.

Uses.—Laxative; emollient; vehicle.

Liquor Alumini Acetatis.—See Alumini Acetatis, Liquor.

Liquor Alumini Subacetatis.—See Alumini Subacetatis, Liquor.

Liquor Ammonii Acetatis.—See Ammonii Acetatis, Liquor.

Liquor Antisepticus (boric acid 2, benzoic acid 0.1, thymol 0.1, eucalyptol 0.025, oil of peppermint 0.05, oil of gaultheria 0.025, oil of thyme 0.01, alcohol 25, purified talc 2, water to 100).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Liquoris antiseptici, ℥ii.

Sig. One teaspoonful, t.i.d.

Uses.—Local and intestinal antiseptic; aromatic mouth-wash.

Liquor Antisepticus Alkalinus N. F. (pot. bicarb. 3.2 per cent., sod. borate 3.2 per cent., and sod. benzoate 0.8 per cent., with thymol, eucalyptol, oil of peppermint, methyl salicylate and cudbear in alcohol, glycerine and water).

Uses.—Mild antiseptic gargle.

Liquor Arseni et Hydrargyri Iodidi.—See Donovan's solution.

Liquor Calcis; Lime Water.—See Calcis, Liquor.

Liquor Calcis Sulphuratæ.—See Calcis Sulphuratæ, Liquor.

Liquor Carbonis Detergens (a proprietary article imitated by the Liquor Picis Carbonis of the B. P., —a 20 per cent. solution of tar with tincture of quillaia).

Uses.—Local antiseptic stimulant.

Liquor Chlori Compositus.—See Chlorine Water.

Liquor Cocci N. F.; Cochineal color.

Uses.—Coloring agent.

Liquor Cresolis Compositus.—See Cresolis, Liquor Compositus.

Liquor Ferri et Ammonii Acetatis.—See Basham's Mixture.

Liquor Ferri Chloridi ($FeCl_3$, about 10.5 per cent.).

Adult Dosage.—Min., ♏i; av., iss; max., iii.

Method of Administration.—Well diluted.

Uses.—Astringent; styptic (coagulant).

Liquor Ferri Peptonati.—See Ferri Peptonati, Liquor.

Liquor Ferri Peptonati et Mangani.—See Ferri Peptonati et Mangani.

Liquor Ferri Subsulphatis.—See Ferri Subsulphatis, Liquor.

Liquor Formaldehydi; Formalin.—See Formaldehydi, Liquor.

Liquor Gutta-perchæ (10 per cent. solution in chloroform; Traumaticin).

Uses.—Protective application to slight wounds.

Liquor Hydrargyri Nitratis: $Hg(NO_3)_2$, 60 per cent.

Uses.—Caustic.

Liquor Hydrogenii Dioxidi.—See Hydrogenii Dioxidi Liquor.

Liquor Hypophysis (Posterior Lobe).—See Hypophysis, Liquor.

Liquor Iodi Compositus; Lugol's Solution.—See Iodi, Liquor Compositus.

Liquor Magnesii Citratis (mag. carb. 15, citric acid 33, syrup of citric acid 60, pot. bicarb. 2½, water to 360).

Dosage.—3 years, ℥ii; 5 years, ℥ii–iv. Adult, min., ℥vi; av., xii; max., xx.

Method of Administration.—Take in one dose, 12 ounces in a bottle.

Uses.—Saline laxative.

Liquor Magnesii Sulphatis Effervescens N. F. (mg. sulph. about 7 per cent., with syrup of citric acid, pot. citrate and water).

Adult Dosage.—Av., ℥xii, or the contents of a bottle.

Uses.—Saline hydragogue cathartic.

Liquor Pancreatini N. F. (Pancreatin 1.75 per cent. sod. bicarb. 5 per cent., with comp. spt. cardamom, sod. chloride and chloroform in alcohol, glycerine and water).

Adult Dosage.—Av., ℥i.

Method of Administration.—℞ Liquoris pancreatini, ℥iv.

Sig.—Teaspoonful t.i.d.p.c., in achlorhydria. It is destroyed by the acid of normal gastric juice.

To peptonize milk, add one-third water to fresh cow's milk, boil, cool, add liquor pancreatini, ℥i–ii to each pint, and keep in a warm place (about 40° C.) for one hour.

Uses.—Proteolytic, amylolytic, and lipolytic.

Liquor Picis Alkalinus N. F. (Wood tar 25, pot. hydrox. 12.5, water to 100).

Uses.—Local antiseptic stimulant.

Liquor Picis Carbonis N. F. (coal tar 20 per cent., quillaia and alcohol).

Uses.—Local antiseptic stimulant.

Liquor Plumbi Subacetatis.—See Goulard's Extract.

Liquor Plumbi Subacetatis Dilutus; Lead Water (4 per cent.)

Uses.—Astringent and cooling lotion.

Liquor Potassæ (KOH, 4.5 to 5 per cent.).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Liquoris potassæ, ℥ss.

Sig.—Fifteen drops, well diluted, three or four times daily.

Uses.—Antacid; caustic; dissolves proteid and keratin.

Liquor Potassii Arsenitis.—See Fowler's Solution.

Liquor Potassii Citratis (8 per cent.).

Adult Dosage.—Min., ℥iv; max., ℥i.+.

Method of Administration.—℞ Liquoris potassii citratis ℥vi.

Sig.—Tablespoonful with plenty of water, three or four times a day.

Uses.—Alkaline diuretic; laxative.

Liquor Potassii vel Sodii Silicatis; Soluble Glass Solution.

Method of Use.—Painted on in order to stiffen bandages after they have been applied.

Liquor Sodæ Chlorinatæ; Labarraque's Solution.
Adult Dosage.—Min., ♏x; av., xv; max., xxx.
Method of Administration.—In 15 to 20 parts of water, as a spray, gargle, or wash.
As a vaginal douche, one teaspoonful to the pint.
Uses.—Antiseptic; disinfectant.

Liquor Sodæ et Menthæ; Soda-Mint N. F. (Sod. bicarb. 5, arom. spt. ammon. 1, spearmint water to 100)
Adult Dosage.—Av., ℥ii.
Method of Administration.—℞ Misturæ sodæ et menthæ, ℥iv.
Sig.—Two teaspoonfuls, as required.
Uses.—Antacid and carminative.

Liquor Sodii Hydroxidi (Soda 56, distilled water to 100).
Adult Dosage.—Min., ♏v; av., xv; max., xxx.
Method of Administration.—Well diluted in water.
Uses.—Antacid.

Liquor Thiosinaminæ Sodio-Salicylatis.—See Fibrolysin.

Liquorice. See Glycyrrhiza.

Lithii Benzoas (soluble in 4 of water).
Dosage.—6 months, gr. i; 18 months, gr. i-ii; 3 years, gr. ii; 5 years, gr. iii-v. Adult, min., gr. v; av., xv; max., xxx.
Method of Administration.—℞ Lithii benzoatis, ℥iv (gr. viiss per dram); aquæ, ℥iv.
M. Sig.—Two drams in half a tumbler or more of water, every two to four hours.
Uses.—Urinary acidifier and antiseptic; diuretic; intestinal antiseptic.
Toxic Action.—Nausea, vomiting, diarrhœa, acute gastro-enteritis; circulatory depression, malaise, muscular weakness.

Lithii Bicarbonas.
Adult Dosage.—Min., gr. ii; av., x; max., xv.
Method of Administration.—℞ Lithii bicarbonatis vel carbonatis, gr. v-x, tabellæ no. 24.
Sig.—Tablet, three or four times daily.
Uses.—Antacid.

Lithii Carbonas Li_2CO_3 (soluble in 78 of water).
Adult Dosage.—Min., gr. ii; av., viii; max., xv.
Method of Administration.—℞ Lithii bicarbonatis vel carbonatis, gr. v-x, tabellæ no. 24.
Sig.—Tablet, three to four times daily.
Uses.—Antacid.

Lithii Citras $Li_3C_6H_5O_7$ (soluble in 1.4 of water).
Adult Dosage.—Min., gr. v; av., viii; max., xx.
Method of Administration.—℞ Lithii citratis, gr. v-x, tabellæ no. 24.
Sig.—Tablet three or four times daily.
Uses.—Systemic alkali and diuretic.

Lithii Citras Effervescens (citrate 5, sod. bicarb. 57, tartaric acid 30, citric acid 19½).
Adult Dosage.—Min., ℥i; av., ii; max., iii.
Method of Administration.—℞ Lithii citratis effervescentis, ℥vi.
Sig.—Two drams in a glass of water, three or four times a day.
Uses.—Systemic alkali and diuretic.

Lithii Salicylas (very soluble in water).
Adult Dosage.—Min., gr. v; av., xv; max., xx.
Physiologic Action and Uses.—Inferior to sodium salicylate because of the toxic action of the lithium with adequate doses.

Lobeliæ Fluidextractum (Indian Tobacco).
Adult Dosage.—Min., ♏i; av., iiss; max., xv (?).
Physiologic Action and Uses.—Sedative expectorant; diaphoretic; diuretic; nervous sedative; relieves bronchial spasm by depressing the vagus nerve terminals in the lungs; stimulates respiratory centre. A dangerous drug, resembling nicotine.
Toxic Action.—Vomiting, purging, depression, feeble heart action, muscular weakness, fall of temperature, coma.

Lobeliæ Pulvis.
Adult Dosage.—Min., gr. ii; av., viiss; max., xv.

Lobeliæ Tinctura.
Adult Dosage.—Min., ♏v; av., xv; max., xx.
Method of Administration.—℞ Tincturæ lobeliæ ℥ii.
Sig.—Ten minims in water, every fifteen minutes until nausea or relief is experienced.
Uses.—For bronchial asthma.

Loeffler's Solution:
Method of Preparation.—℞ Toluol, 36.0; alcoholis absoluti, 60.0; liquoris ferri sesquichloridi, 4.0.
M. Sig.—Apply once to thrice daily.
Uses.—Antiseptic astringent.

Lotio Alba.
Method of Administration.—℞ Zinci sulphatis, ℥ss-iv; potassii sulphureti, ℥ss-iv; glycerini, ♏iv-viii; aquæ, ℥iv.
M. Sig.—Apply two or three times daily, beginning with a diluted solution and gradually increasing the strength until some irritation and desquamation is produced.
Uses.—Local stimulating lotion.

Lotio Calaminæ.
Method of Administration.—℞ Calaminæ, ℥iss; zinci oxidi, ℥iii; acidi borici, ℥ii; glycerini, ♏v-xv; acidi carbolici, ♏xv-℥i; liquoris calcis, ℥ii; aquæ, *q.s.* ad, ℥vii..
M. Sig.—Shake well. For local use.
Uses.—Antiseptic; antipruritic; protective.

Lotio Fulleri; Fuller's Lotion.
Method of Administration.—℞ Sodii carbonatis, ℥vi; tincturæ opii, ℥i; glycerini, ℥ii; aquæ, ℥ix.
M. Sig.—Apply warm.
Uses.—Local analgesic.

Lotio Nigra; Black Wash (calomel gr. xxx, in lime-water ℥x, producing the black oxide, Hg_2O).
Uses.—Antiseptic.

Lotio Plumbi et Opii.
Method of Administration.—℞ Plumbi acetatis, gr. xxvii; tincturæ opii, ℥i; aquam ad, ℥iii.
M. Sig.—For external use.
℞ Liquoris plumbi subacetatis, ℥ii-iv; tincturæ opii, ℥ss-iv; aquam ad, ℥iv.
M. Sig.—For external use.
Uses.—Astringent, anodyne lotion.

Lozenges. See Trochisci.

Lubraseptic (chondrus, boric acid, and formaldehyde).
Uses.—Lubricant for instruments.

Lubrichondrin (chondruscrispus, oil of eucalyptus and formaldehyde).
Uses.—Lubricant for instruments.

Lugol's Solution; Liquor Iodi Compositus (iodine 5, pot. iodide 10, distilled water to 100).
Adult Dosage.—Min., ♏i; av., iii; max., x.
Method of Administration.—℞ Liquoris iodi compositi, ℥ss.
Sig.—Three drops in a wineglassful of water, t.i.d.p.c.
Uses.—Alterative.

Luminal; Luminal-Sodium.
Adult Dosage.—Gr. iss-ii-iii, by mouth or hypodermically.
Uses.—Nervous sedative; employed in epilepsy, chorea insaniens, and nervous excitation.

Lupulinum (glandular powder obtained from hops).
Adult Dosage.—Min., gr. v; av., viii; max., xv.
Method of Administration.—℞ Lupulini, gr. vii, pulveres no. 12.
Sig.—One, t.i.d.
Uses.—Bitter tonic.

Lutein; Corpus Luteum Dessiccatum.
Adult Dosage.—Gr. v-x.
Method of Administration.—℞ Corporis lutei, gr. v-x, pulveres, tabellæ, vel capsulæ no. 36.
Sig.—Tablet, capsule, or powder, t.i.d.p.c.
Physiologic Action and Uses.—Alterative in amen-

orrhœa and the menapause, or "ovarian insufficiency."

Lycopodium (Spores of the Club-moss).

Uses.—Protective powder; diluent.

Lysol (a strongly alkaline solution of cresols 50 per cent., and higher homologues, similar to liquor cresolis compositus, *q.v.*); "prepared by treating the fraction of tar oils chiefly composed of cresols with fat and then saponifying with alcoholic soda" (Dakin and Dunham).

Method of Administration.—One teaspoonful to the quart of water, as an antiseptic wash.

Uses.—Antiseptic.

Magnesiæ Magma; Milk of Magnesia; Fluid Magnesia (suspension of mag. hydroxide, $Mg(OH)_2$, about 7 per cent. in water).

Adult Dosage.—Av., ℥iiss.

Method of Administration.—℞ Magmæ magnesiæ.

Sig.—Shake well, and take a tablespoonful, with a teaspoonful of lemon juice, as a laxative; without the lemon juice as an antacid (about one to two hours after meals).

Uses.—Antacid; laxative; tooth-wash.

Magnesii Borocitras.

Adult Dosage.—Av., gr. xv, t.i.d.

Method of Administration.—℞ Magnesii carbonatis ℥i; acidi citrici, ℥ii; sodii biboratis, ℥ii; aquæ bullientis, ℥viii.

M. Sig.—Tablespoonful, two or three times daily.

Uses.—Uric acid solvent.

Magnesii Carbonas $(MgCO_3)_4Mg(OH)_2+5H_2O$.

Dosage.—6 months, gr. v-x; 18 months, gr. xx; 3 years, gr. xxx-xl; 5 years, gr. xl-℥i. Adult, min., gr. xxx; av., xlv; max., ℥i.

Method of Administration.—℞ Magnesii carbonatis gr. xxx; sacchari lactis, *q.s.*

Misce et mitte talis pulveres no. 12.

Sig.—Powder one to two hours after meals.

Physiologic Action and Uses.—Mild laxative; antacid; neutralizes acid in the intestine and so deprives the urine of a portion of its acid constituents.

Magnesii Citratis Liquor (mag. carb. 15, citric acid 33, syrup of citric acid 60, pot. bicarb. 2½, water to 360.

Dosage.—3 years, ℥ii; 5 years, ℥ii-iv. Adult min., ℥vi; av., xii; max., xx.

Method of Administration.—Take in one dose, twelve ounces in a quarter.

Uses.—Saline laxative.

Magnesii Gynocardas.

Adult Dosage.—Min., gr. ss; av., iii; max., xlv.

Method of Administration.—℞ Magnesii gynocardatis, gr. ss, capsulæ no. 12.

Sig.—One capsule, t.i.d.p.c., the dose to be gradually increased to gr. iii-xlv, t.i.d., or 3 to 5 grain capsules ten to twenty times daily.

Uses.—Used in leprosy.

Magnesii Oxidum, MgO (Light or Calcined Magnesia; gelatinizes with 15 of water, after standing one-half hour, having become hydrated).

Dosage—6 months, gr. v-x; 18 months, gr. x-xx; 3 years, gr. xx-xxx; 5 years, gr. xxx-xl. Adult, min., ℥ss; max., i.

Method of Administration.—℞ Magnesii oxidi, ℥iv (gr. xv to the tablespoonful); syrupi acaciæ ℥ii; aquæ, *q.s.* ad, ℥viii.

M. Sig.—Shake well, and take one to two tablespoonfuls, as required, for acidity, or about one or two hours after meals.

Uses.—Antacid; laxative.

Magnesii Oxidum Ponderosum, MgO (Heavy Magnesia; does not gelatinize with water).

Dosage.—6 months, gr. v-x; 18 months, gr. x-xx 3 years, gr. xx-xxx; 5 years, gr. xxx-xl. Adult, min. ℥ss; max., i.

Method of Administration.—℞ Magnesii oxidi ponderosi, ℥iv (gr. xv to the tablespoonful); syrupi acaciæ, ℥iv; aquæ, *q.s.* ad, ℥viii.

M. Sig.—Shake well, and take one to two tablespoonfuls, as required, for acidity.

Uses.—Antacid; laxative.

Magnesii Sulphas; Epsom Salt; $MgSO_4+7H_2O$ (soluble in 1 of water).

Dosage.—6 months, gr. x-xv; 18 months, gr. xx 3 years, gr. xx-xxx; 5 years, ℥ss-i. Adult, min., ℥i; av., iv; max., ℥i.

Method of Administration.—℞ Magnesii sulphatis, ℥i (℥ii per dose); aquæ, *q.s.* ad, ℥ii.

M. Sig.—Tablespoonful in half a cup of coffee, every two hours until effectual.

Two tablespoonfuls of the salt to the pint as an enema.

Uses.—Saline, hydragogue cathartic.

Magnesii Sulphatis, Liquor Effervescens, N. F., (Mg. sulph. about 7 per cent. with syrup of citric acid, pot. citrate, and water).

Adult Dosage.—Av., ℥xii, or the contents of a bottle

Uses.—Saline, hydragogue cathartic.

Male Fern.—See Aspidii Oleoresina.

Mallein (Toxin produced by the bacillus mallei of glanders).

Method of Administration.—Begin with 1 milligram hypodermically, and increase the dose in the course of sixteen days to thirty milligrams or more.

Uses.—Used in the diagnosis and treatment of glanders. For diagnostic purposes it is used the same as tuberculin.

Malti Extractum (chiefly diastase, maltose, and extractives).

Dosage.—6 months, ℥i-ii 18 months, ℥ii-iv; 3 years ℥iv; 5 years, ℥i. Adult, min., ℥i; av., iv; max., ℥i.

Method of Administration.—℞ Extracti malti, ℥viii.

Sig.—One to four teaspoonfuls, alone or in milk or bouillon, once to four times daily, p.c.

Uses.—Amylolytic enzyme; nutrient.

Maltine. See Extractum Malti.

Mammary Gland Dessicated; Glandulæ Mammæ Dessicatæ.

Adult Dosage.—Min., gr. ii; max., vi.

Method of Administration.—℞ Glandulæ mammæ dessicatæ, gr. ii, tabellæ no. 30.

Sig.—One to three tablets, t.i.d.

Uses.—Uterine hæmostatic.

Mandl's Solution.

Method of Preparation.—℞ Iodi puri, gr. vi; potassii, iodidi, gr. xx; olei menthæ piperitæ, ♏v; glycerini, ℥i.

Uses.—Local stimulating application to mucous membranes.

Mangani Dioxidum Præcipitatum, MnO_2.

Adult Dosage.—Min., gr. ii; av., iv; max., x.

Method of Administration.—℞ Mangani dioxidi præcipitati, gr. iv, tabellæ no. 30.

Sig.—Pill, three or four times a day, before or after meals.

Uses.—Emmenagogue; intestinal antiseptic.

Toxic Action.—Gastro-intestinal irritation; cardiovascular depression; emaciation; paraplegia; acute fatty degeneration of the liver.

Manna (a dried sap containing mannite, $C_6H_{14}O_6$, glucose, mucilage, etc.).

Adult Dosage.—Min., ℥i; av., ii; max., ℥i.

Method of Administration.—℞ Mannæ optimæ, ℥i.

Sig.—Teaspoonful to tablespoonful, dsisolved in milk.

Uses.—Mild laxative.

Mannæ Syrupus N. F. (Manna 12.5 per cent., alcohol and syrup).

Adult Dosage.—Av., ℥ii.

Mannitol Hexanitras.

Adult Dosage.—Av., gr. i.

Method of Administration.—℞ Mannitol hexanitratis, gr. i, tabellæ no. 20.

Sig.—Tablet, t.i.d., increased gradually until flushing, throbbing, or slight transient faintness are felt.

Physiologic Action and Uses.—Vasodilator; begins to act after about two hours, and the action persists for several hours.

Marsden's Paste.—See Part 5, Skin Diseases, under Carcinoma Cutis.

Uses.—Caustic.

Massa Hydrargyri; Blue Mass; Blue Pill, (*q.v.*)

Dosage.—3 years, gr. i; 5 years, gr. i-ii. Adult, min., gr. v; av., x; max., xv.

Method of Administration.—℞ Massæ hydrargyri, gr. v-x, pilulæ no. 60.

Sig.—One pill a day.

Uses.—Cathartic; antiluetic.

Matzoon; Zoolak.

Method of Preparation.—Boil thoroughly eleven and a quarter quarts of milk, and remove all the cream from the top. While the milk is still quite warm, add and mix thoroughly a bottle of prepared bottled zoolak; place quickly in pint bottles, not entirely full; cork tightly at once, and keep in a warm place until the liquid appears creamy through the bottles. Then keep in a cold place.

Meat Extracts.

Method of Preparation.—Thoroughly mix one pound of finely minced beef with one pint of cold water. Set aside for ten minutes. Place in a pot surrounded by water, and gradually heat the water to the boiling point. Decant off the liquid, and, after cooling, skim off the fat.

Physiologic Action and Uses.—Digestive stimulant; necessary to normal metabolism.

Meat Juice.

Method of Preparation.—1. Stir four parts of finely chopped or ground fresh raw steak with one part of cold water, allow to stand for half an hour in the cold, and then express the juice through a cloth or meat press; or place on pound in a pint of sterile water one ice over night; strain in the morning through a sterile cheesecloth bag, season, and slightly warm.

2. Cut round or sirloin steak into small cubes; broil quickly both sides so as to prevent the escape of the contained juices. Squeeze out the juice by means of a hot lemon-squeezer, into a hot wineglass, season with salt and cayenne pepper, and serve hot.

Medinal. See Veronal-Sodium.

Mel; Honey (about 40 per cent. levulose, 35 per cent. dextrose, and 3 per cent. saccharose).

Menthæ Piperitæ Aqua (Saturated Peppermint Water, containing 0.2 per cent. oil of peppermint).

Dosage.—6 months, ʒi; 18 months, ʒi-ii; 3 years, ʒiii; 5 years, ʒiv. Adult, min., ʒiv; max., vi.

Method of Administration.—℞ Aquæ menthæ piperitæ, ʒ viii.

Sig.—Tablespoonful every two hours, for colic and flatulence, up to five to six ounces a day for an adult.

Uses.—Carminative; stimulant; vehicle.

Menthæ Piperitæ Oleum; Oil of Peppermint.

Adult Dosage.—Min., ♏i; av., iii; max., v.

Method of Administration.—℞ Olei menthæ piperitæ, ʒi.

Sig.—Three drops in hot water, every two hours.

Uses.—Carminative and flavoring agent; local anodyne.

Menthæ Piperitæ Spiritus; Essence of Peppermint (oil of peppermint 10, bruised herb 1, alcohol to 100).

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Spiritus menthæ piperitæ, ʒss.

Sig.—Thirty drops in hot water, every two hours.

Uses.—Carminative; stimulant.

Menthæ Viridis Aquæ (spearmint water, containing 0.2 per cent. of oil of spearmint).

Dosage.—6 months, ʒi; 18 months, ʒii; 3 years, ʒiii; 5 years, ʒiv. Adult, min., ʒi; max., vi.

Method of Administration.—℞ Aquæ menthæ viridis, ʒii.

Sig.—A dose, as required, for colic and flatulence

Uses.—Carminative; vehicle.

Menthæ Viridis Oleum; Spearmint Oil.

Adult Dosage.—Min., ♏ii; av., iii; max., v.

Method of Administration.—℞ Olei menthæ viridis, ʒi.

Sig.—Three to five drops, in hot water, every two hours.

Uses.—Carminative; flavoring vehicle.

Menthæ Viridis Spiritus; Essence of Spearmint oil of spearmint 10, bruised herb 1, alcohol to 100).

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Spiritus menthæ viridis.

Sig.—Thirty drops in hot water every two hours.

Uses.—Carminative; flavoring vehicle.

Menthol: $C_{10}H_{19}OH$ (obtained from mint oils; slightly soluble in water, very soluble in alcohol, chloroform, ether, and oils).

Adult Dosage.—Min., gr. ss; av., i; max., v.

Method of Administration.—℞ Mentholis, gr. xxiv (gr. 0.2 ad ♏i); olei olivæ vel ætheris, ʒii.

Misce et fiat solutio.

Sig.—Ten drops, on sugar, as a gastric sedative.

℞ Mentholis, gr. i-iii, olei olivæ, *q.s.*

M. Fiat solutio et pone in capsula (hardened with formalin).

Mitte talis capsulæ no. 30.

Sig.—One capsule three to five times a day, p.c., as an intestinal antiseptic.

℞ Mentholis, gr. ii-x-xx. Petrolati liquidi, ʒi.

M. Sig.—Nasal or throat spray. (For the nose, do not as a rule exceed gr. v to the ounce).

Uses.—Gastric sedative; local analgesic; antipruritic; refrigerant; counter-irritant;intestinal antiseptic.

Mentholis Unguentum (5 to 15 per cent.).

Uses.—Antipruritic; refrigerant.

Mentholis Valeras; Validol: $CH_3.CH_2.CH_2COO.C_{10}H_{19}$.

Adult Dosage.—Min., ♏x; av., xv; max., xx.

Method of Administration.—℞ Mentholis valeratis, ʒii.

Sig.—Ten to twenty drops on sugar, or in a little sweet wine or coffee every four hours, or once to thrice daily.

Uses.—Gastric sedative.

Mercurochrome-220; disodium salt of dibromo oxymercury fluorescin, containing 23 to 24 per cent. of mercury: NaOOC. C_6H_4. C: C_6H_4Br: O. C_6HBr (ONa) (HgOH). $3H_2O$ (incompatible with acids; freely soluble in water; soluble in 65 per cent. alcohol; insoluble in chloroform or ether).

Uses.—Germicide. For pyelitis, 1 per cent. solution retained five minutes; for cystitis or posterior urethritis, 1 per cent. retained one hour or longer; for anterior urethritis, 1 per cent. retained five minutes, the strength later increased to 2.5 per cent; for ophthalmia neonatorum, 2.5 per cent.; for chancroidal ulceration, 1 per cent. solution, or 5 per cent. starch paste, or 5 per cent. ointment: for otitis media, etc., 1 per cent. solution. The red skin discoloration may be removed with sodium hypochlorite solution.

Mercury. See Hydrargyrum.

Mercury-Vasogen (comes in 33 per cent., 50 per cent., and 75 per cent. strengths).

Method of Administration.—℞ Mercury-Vasogen 50 per cent., ʒss–i, capsulæ no. 12.

Sig.—One capsule daily for inunction. See Part 1, under Syphilis.

Uses.—Antiluetic; antiseptic; parasiticide.

Methylene Blue; Methylthioninæ Chloridum (freely soluble in water and alcohol).

Adult Dosage.—Min., gr. i; av., iv; max., vi.

Method of Administration.—℞ Methylthioninæ chloridi; myristicæ, aa, gr. iv.

M. Mitte talis capsulæ no. 30. (The nutmeg is added to prevent strangury).

Sig.—One capsule three to five times daily.

Physiologic Action and Uses.—Urinary antiseptic; inhibits the growth of staphylococci in the kidneys and bladder; antimalarial.

Methylis Chloridum CH_3Cl (a gas).

Uses.—Local refrigerant.

Methylis Salicylas; Oil of Wintergreen, Oleum Gaultheriæ.

Dosage.—6 months, gt. i; 18 months, gtt. ii–iii; 3 years, gtt. iii; 5 years, gtt. iii–v. Adult, min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Olei gaultheriæ, ʒi.

Sig.—Twelve to twenty drops, well diluted in sweetened water or milk, every two to four hours. It may be prescribed in formalin-hardened capsules.

For external application and absorption: either pure or diluted with lanolin (ten per cent. ung.) or an oil.

Physiologic Action and Uses.—Antirheumatic; antipyretic; local anodyne; flavor; very irritating to the stomach; readily absorbed through the skin.

Mineral Oil. See Petrolatum Liquidum.

Mineral Waters:

Carbonated—West Virginia: Old Sweet Spring; Virginia: Sweet Chalybeate Spring. Germany: Selters (Seltzer), Apollinaris.

Alkaline—America: Bladon Spring, Ala.; Congress Spring, Cal.; Seltzer Spring, Cal.; St. Louis Spring, Mich.; Buffalo Lithia Spring, Congress, Hathorn, Kissingen and Vichy Springs, in Va.; Saratoga, N. Y.; Hot Spring, Va.; Warm Spring, Va.; Berkeley Spring, Va.; Bethesda Spring, Wis.; Gettysburg Spring, Pa. France: Vichy, Vals, Royat, La Bourboule. Austria: Gleickenberg, Luhctschowitz. Germany: Ems, Salzbrunn, Selters, Wiesbaden.

Saline—America: Saratoga Springs, N. Y.; Ballston, N. Y.; Hot Springs, Ark.; St. Catherine's, Ontario, Canada. Spain: Rubinat. Bohemia: Carlsbad, Püllna, Seidlitz, Marienbad, Franzenbad. England: Cheltenham. Hungary: Apenta, Hunyadi Janos. Germany: Friedrichshall, Baden-Baden, Wiesbaden, Kissingen, Reichenhall, Adelheidsquelle, Kreutznach.

Sulphurous—America: Blue Lick Spring, Ky.; Sharon Spring, N. Y.; Yellow Sulphur Spring, Va.; White Sulphur Spring, W. Va. France: Baréges, Eaux Bonnes. Britain: Llandrindod, Wales; Harrowgate, England. Germany: Aix-la-Chapelle.

Silicious—America: Geysers of Yellowstone Park. Iceland: Hot Springs.

Ferruginous—America: Saratoga and Sweet Chalybeate, Va. Switzerland: St. Moritz, Levico, Roncegno. Belgium: Spa. Germany and Austria: Pyrmont, Franzenbad, Kissingen, Langenschwalbach.

Mistura Bashami; Liquor Ferri et Ammonii Acetatis (tr. ferri chl. 4, dilute acetic acid 6, sol. of ammon. acetate 50, aromatic elixir 12, glycerine 12, water to 100).

Dosage.—3 years, ʒss; 5 years, ʒi. Adult, min., ʒii; av., iv; max., ʒi.

Method of Administration.—℞ Misturæ Bashami, recentis præparati, ʒiv.

Sig.—One or two tablespoonfuls in a tumbler of water, every three to four hours.

Uses.—Diaphoretic; diuretic; hæmatic.

Mistura Ferri Acida; Mistura Ferri Laxans.

Method of Administration.—℞ Magnesii sulphatis, ʒi; ferri sulphatis, gr. iv–viii; acidi sulphurici diluti, ʒi–ii; aquæ menthæ piperitæ, *q.s.* ad, ʒiv.

M. Sig.—Tablespoonful in a full glass of water, one hour before breakfast.

Uses.—Acid, chalybeate, saline aperient.

Mistura Glycyrrhizæ Composita; Brown Mixture (ext. glycyr. 3, syrup 5, acacia 3, paregoric 12, vin. antim. 6, spt. æth. nit. 3, water to 100).

Dosage.—6 months, gtt. xv; 18 months, gtt. xx; 3 years, gtt. xxx–xl; 5 years, gtt. xl–ʒi. Adult, min., ʒi; av., ℥iss; max., ʒi.

Method of Administration.—℞ Misturæ glycyrrhizæ compositæ, ʒiv.

Sig.—Two or three or four teaspoonfuls every two hours, or as required, for cough.

Uses.—Sedative expectorant.

Mistura Helonin Composita.

Method of Administration.—℞ Misturæ helonin compositæ, ʒiv.

Sig.—Teaspoonful in half a teacupful of hot water every fifteen minutes during a paroxysm of menstrual pain; or t.i.d. during the intermenstrual period for a week before the flow is expected.

Uses.—Uterine sedative.

Mistura Rhei et Sodæ (sod. bicarb. 3½, fl. ext. rhei 1½, fl. ext. ipecac, ⅛, glycerine 35, spt. menth. pip. 3½, water to 100).

Adult Dosage.—Min., ʒss; av., i; max., iv.

Method of Administration.—℞ Misturæ rhei et sodæ, ʒii.

Sig.—Teaspoonful once to thrice daily, p.c

Uses.—Antacid; laxative.

Mistura Rhei et Sodæ (Kerley).

Dosage.—6 months, ʒss; 18 months, ʒii; 3 years, ʒiii; 5 years, ʒiv. Adult, av., ʒiv.

Method of Administration.—℞ Pulveris rhei, gr. xlviii; sodii bicarbonatis, gr. xlviii; syrupi rhei aromatici, ʒi; aquæ, *q.s.* ad, ʒii.

M. Sig.—A dose once to thrice daily. (Kerley.)

Uses.—Antacid; laxative.

Mistura vel Liquor Sodæ et Menthæ; Soda-Mint, N. F. (sod. bicarb. 5, arom. spt. ammon 1, spearmint water to 100).

Adult Dosage.—Av., ʒii.

Method of Administration.—℞ Misturæ sodæ et menthæ, ʒiv.

Sig.—Two teaspoonfuls, as required.

Uses.—Antacid and carminative.

Monobromated Camphor; Camphora Monobromata: $C_{10}H_{15}BrO$ (almost insoluble in water; soluble in 6.5 of alcohol).

Adult Dosage.—Min., gr. i; av., ii; max., v.

Method of Administration.—℞ Camphoræ monobromatæ, gr. lxxx (gr. v per dram); syrupi acaciæ; aquæ, aa, ʒi.

M. et ft. emulsum.

Sig.—ʒss–i, t.i.d. It may be prescribed in pill or capsule.

Uses.—Nervous sedative; hypnotic; anaphrodisiac.

Monochloraceticum Acidum.

Uses.—Caustic.

Morphina (an alkaloid: $C_{17}H_{19}NO_3$; soluble in 3340 of water, 210 of alcohol).

Dosage.—6 months, gr. 1/100; 18 months, gr. 1/100; 3 years, gr. 1/50; 5 years, gr. 1/30–1/20. Adult, min., gr. ⅛; av., ¼; max., ½.

Method of Administration.—The preceding are Kerley's doses for children. Holt's doses are gr. $\frac{1}{1000}$ at one month, $\frac{1}{800}$ at three months, $\frac{1}{200}$ at one year. Says Potter: Avoid giving morphine to children under ten years, and never give it hypodermically to those below fifteen years. The dose may be repeated every three to four hours, if required. Ordinarily it should not be repeated oftener than every two hours.

Physiologic Action and Uses.—Nervous sedative; analgesic; hypnotic; diaphoretic; depresses the perception of pain and discomfort in the sensorium; depresses the reflex excitability of the cough centre; renders respiration quieter, deeper, and slower; relieves cough and cardiac dyspnœa; quiets peristalsis. Contraindicated where expectoration is marked. Morphine causes constipation by persistent closure of the pylorus, which retards the passage of chyme into the intestine; by lessening the gastric, pancreatic, and intestinal secretion, by diminishing the excitability of the vagus and sensory nerve-endings in the walls of the intestine, and probably by contracting the ileocolic sphincter.

Toxic Action.—Stupor, marked miosis, slow respirations, slow, weak heart, coma, death from respiratory failure. Less than one grain is seldom fatal to an adult.

Morphinæ Hydrochloridum: $C_{17}H_{19}NO_3.HCl+3H_2O$ (soluble in 17.5 of water, 52 of alcohol).

Dosage, etc.—See Morphina, above.

Morphinæ Sulphas: $(C_{17}H_{19}NO_3)_2.H_2SO_4+5H_2O$. (soluble in 15.2 of water, 565 of alcohol).

Dosage, etc.—See Morphina, above.

Morrhuæ Oleum; Codliver Oil. See Codliver Oil.

Morrison's Paste.—See B. I. I. P.

Mucilago Acaciæ (Acacia 35, distilled water to 100).

Adult Dosage.—Min., ℥ii; av., iv; max., vi.

Uses.—Demulcent; used to suspend insoluble powders in mixtures.

Mucilago Cydonii; Mucilago Seminum Cydoniorum (Quince-seed).

Dosage.—Indefinite.

Uses.—Demulcent; emollient.

Mucilago Sassafras Medullæ.

Adult Dosage.—Av., ℥iv.

Uses.—Demulcent; flavor; for the suspension of insoluble powders.

Mucilago Tragacanthæ (Tragacanth 6, glycerine 18, water to 100).

Adult Dosage.—Min., ℥ii; av., iv; max., vi.

Uses.—Demulcent; used to suspend insoluble powders in mixtures.

Muscarinæ Nitras (Muscarine is an alkaloid, $C_5H_{13}NO_2$; readily soluble in water).

Adult Dosage.—Min., gr. $\frac{1}{30}$; max., $\frac{1}{16}$ (Merck). Min., gr. $\frac{1}{3}$; max., $\frac{3}{4}$ (Ringer).

Method of Administration.—Hypodermically, five minims of a one per cent. solution (gr. $\frac{1}{20}$) is recommended as an anhidrotic (why?).

Physiologic Action and Uses.—Antagonist of atropine (*q.v.*): stimulates autonomic nerve endings, producing miosis, slowing of the heart, contraction of the bronchial muscles, contraction of the gastric and intestinal muscles, increased glandular secretion.

Toxic Action.—Respiratory and cardiac depression, lowered arterial tension, salivation, lachrymation, sweating, dyspnœa, oliguria, colic, vomiting, purging, lowered temperature, miosis and spasm of accommodation.

Mustard; Sinapis; Sinapis Nigra.

Adult Dosage.—Min., ℥i; av., iiss; max., iv.

Method of Administration.—In half a glass of lukewarm water, as an emetic.

Mustard paste or poultice: 1 part black mustard with 2 to 6 of flour, made up into a paste with water, and applied, between layers of cheesecloth, until a red flush is produced (usually about 20 minutes). It may be repeated three to six times daily.

Mustard Bath or Pack: One to two tablespoonfuls to four to six gallons of water.

Foot-Bath: One tablespoonful to the gallon.

Uses.—Emetic; rubefacient and counter-irritant; vesicant.

Toxic Action.—Gastro-enteritis.

Mustard Plaster; Emplastrum Sinapis.

Uses.—Counter-irritant.

Myristica; Nutmeg.

Adult Dosage.—Min., gr. v; av., viiss; max., xv.

Uses.—Stomachic; carminative; astringent; relieves strangury.

Toxic Action.—Stupor, delirium.

Myrrhæ et Aloes; Pilulæ.

Adult Dosage.—Min., i; av., ii; max., v.

Method of Administration.—℞ Pilulæ aloes et myrrhæ, no. 24.

Sig.—One pill, t.i.d.

Uses.—Purgative; emmenagogue.

Myrrhæ Tinctura.

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Tincturæ myrrhæ, ℥i.

Sig.—Fifteen drops, in water, t.i.d.

Mouth-wash and gargle:—℥i ad aquam ℥i–Oi.

Uses.—Astringent; carminative; emmenagogue; local stimulant and disinfectant.

Toxic Action.—Vomiting; purging.

Myrtol; Oleum Myrti; Oil of Myrtle.

Adult Dosage.—Min., gtt. i; av., ii; max., iii.

Method of Administration.—℞ Olei myrti, gtt. ii, capsulæ no. 30.

Sig.—One capsule three to five times a day, or every two hours.

Uses.—Gastric tonic; bronchial and urinary antiseptic; anthelmintic.

Naphthaleni Tetrachloridum.

Adult Dosage.—Min., gr. v; max., x.

Method of Administration.—℞ Naphthaleni tetrachloridi, gr. v–x, capsulæ no. 30.

Sig.—Capsule, three or four times daily.

For children, gr. ii–vi, according to age.

Physiologic Action and Uses.—Intestinal antiseptic; insoluble, therefore not absorbed, and so not toxic.

Naphthol, Beta; a monohydroxyphenol: $C_{10}H_7OH$ (soluble in 1000 of water, 0.8 of alcohol).

Adult Dosage.—Min., gr. iii; av., v; max., x.

Method of Administration.—℞ Betanaphthol, gr. v, pilulæ (intestinal coated) no. 21.

Sig.—One pill, t.i.d.a.c.

Externally as a 3–5 per cent. ointment (danger of absorption).

Physiologic Action and Uses.—Intestinal and urinary antiseptic; anthelmintic; local antiseptic and parasiticide.

Toxic Action.—Nephritis; anæmia from destruction of the red blood-cells; sometimes retinal and lenticular changes.

Naphthol Camphoratum (Beta-naphthol 1, heated carefully with camphor 2 parts).

Adult Dosage.—Min., ♏ii; max., v.

Method of Administration.—Injected, undiluted, or in olive oil, into cavities and tissues.

Uses.—Antiseptic.

Nauheim Bath. See Baths, Medicated.

Neosalvarsan; Neo-arsphenamine; Sodium 3-diamino-4-dihydroxi-1-arsenobenzene-methanal-sulphoxylate: $NH_2.OH.C_6H_3.As : As.C_6H_3.OH.NH.(CH_2O)OSNa$. (A soluble compound of salvarsan).

Adult Dosage.—Min., 0.6; av., 0.75; max., 0.9, gm.

for males. Min., 0.45; av., 0.6; max., 0.75, gm., for females. For children—Min., 0.15; max., 0.3 gm.

Method of Administration.—For intravenous injection one may employ 25 cc. of sterile, freshly distilled, cold water, or well-boiled and cooled tap water (not over 22° C., or 71° F.), for every 0.15 gm. of neosalvarsan; for intramuscular injection, employ 3 cc. of water for each 0.15 gm.; an approximately isotonic solution; but a concentrated solution may be employed intravenously, using 10 cc. sterile distilled water for 0.45–0.6 gm., and 15 cc. for 0.75–0.9 gm. neosalvarsan. See Part 1, under Syphilis.

Nitre, Sweet Spirits of; Spiritus Ætheris Nitrosi: Ethyl Nitrite $C_2H_5NO_2$, 4 per cent. in alcohol (should not be kept long, as it turns acid).

Dosage.—6 months, gtt. ii–iii; 18 months, gtt. iii–v; 3 years, gtt. v; 5 years, gtt. v–x. Adult, min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Spiritus ætheris nitrosi, ℥i.

Sig.—One teaspoonful, well diluted, in sweetened water, every one to three hours.

Uses.—Diaphoretic, diuretic, carminative.

Nitricum Acidum HNO_3.

Method of Administration.—Apply by means of a glass rod or matchstick, with the surrounding healthy tissue protected by vaseline.

Uses.—Caustic.

Nitricum Acidum Dilutum (10 per cent. of HNO_3 by weight).

Adult Dosage.—Min., ♏x; av., xxx; max., xl.

Method of Administration.—℞ Acidi nitrici diluti, ℥i.

Sig.—Thirty drops, in a wineglassful of water, t.i.d., taken through a glass tube; rinse the mouth afterward with soda-water.

Uses.—Cholagogue; acid.

Nitris Amylis: $C_5H_{11}NO_2$.

Adult Dosage.—♏ii; av., iii; max., v.

Method of Administration.—℞ Amylis nitritis, Miii–v.

Dispense in perles, no. 12.

Sig.—Break a perle in the handkerchief, and inhale, as required.

Physiologic Action and Uses.—Vasodilator, acting both centrally and peripherally, depressing the tonus of the vasomotor centre and the vessels. The action lasts but a few minutes.

Toxic Action.—Nausea, vomiting, unconsciousness, occasionally convulsions, methæmoglobinæmia, collapse, respiratory paralysis.

Nitris Sodii $NaNO_2$ (soluble in 1.5 of water).

Adult Dosage.—Min., gr. ss; av., i; max., iii.

Method of Administration.—℞ Sodii nitritis, gr. xvi (gr. i per dram). Aquæ destillatæ, ℥ii.

Sig.—One dram, three or four times daily, gradually increased, until flushing, palpitations, buzzing in the ears, or headache occurs, then reducing the dose somewhat, and occasionally increasing it tentatively. Intermit the drug every ten days for five days.

Physiologic Action and Uses.—Vasodilator (peripheral action); relaxant of bronchial tubes, intestines, renal and biliary tracts. The effect of a single dose lasts from one-half to two hours.

Toxic Action.—Flushing, palpitation, tinnitus, severe headache, methæmoglobinæmia, with resulting asphyxia.

Nitrogenii Monoxidum N_2O; Nitrous Oxide; Laughing Gas.

Uses.—Inhalation anæsthetic.

Nitroglycerin, Spirit of; Spiritus Glycerylis Nitratis (1 per cent.).

Dosage.—6 months, gt. ¼; 18 months, gt. ⅓; 3 years, gt. ½; 5 years, gt. i. Adult, min., ♏ss; av., i; max., ii.

Method of Administration.—℞ Spiritus glonoini, ℥ss.

Sig.—One-half to one drop, in water, or dropped on or under the tongue, every half to two to four hours, or one drop three or four times a day, increased by one drop every four or five days, until flushing, headache, palpitation, or buzzing in the ears occurs; then reduce the dose several drops, and occasionally increase it tentatively. ♏viii–x may have to be given before the desired physiological effect is produced. Intermit the drug every ten days for five days.

Physiologic Action and Uses.—Vasodilator; peripheral relaxant action upon the muscles of the arterioles; also relieves spasm of the bronchi, intestines, renal and biliary tracts. The effect lasts about twenty to forty minutes.

Nitroglycerin Tablets; Tabellæ Trinitrini: $C_3H_5(NO_3)_3$.

Dosage.—6 months, gr. 1/400; 18 months, gr. 1/300; 3 years, gr. 1/200; 5 years, gr. 1/100. Adult, min,. 1/100; max., 1/50.

Method of Administration.—℞ Tabellarum trinitrini, gr. 1/100, no. 20.

Sig.—One tablet, in water, or best dissolved on or under the tongue, every two to four hours; or three to four times a day, gradually increased by one tablet every four or five days, until flushing, headache, palpitation, or buzzing in the ears occurs; then reduce the dose several tablets and occasionally increase it tentatively. Gr. 1/20 or even 1/10 may have to be given before the desired physiological effect is produced. Intermit the drug every ten days for five days.

Physiologic Action and Uses.—Vasodilator; peripheral relaxant action upon the muscles of the arterioles; also relieves spasm of the bronchi, intestines, renal and biliary tracts. The effect of a single dose lasts about twenty to forty minutes.

Nitrohydrochloricum Acidum Dilutum (nitric acid 4, hydrochloric acid 18, water 78 vols.; should be freshly prepared).

Adult Dosage.—Min., ♏v; av., xv; max., xx.

Method of Administration.—℞ Acidi nitrohydrochlorici diluti, ℥i.

Sig.—Fifteen drops in a wineglassful of water, t.i.d., taken through a glass tube; rinse the mouth afterward with soda water.

Uses.—Cholagogue; acid.

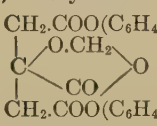
Normal Salt Solution. See Sodii Chloridum.

Nosophen; Iodophen; Tetraiodo-phenolphthalein.

Adult Dosage.—Min., gr. v; max., viii.

Uses.—Antiseptic powder.

Novaspirin; Methylene-Citrylsalicylic Acid:



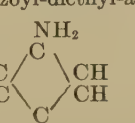
Adult Dosage.—Gr. x-xv-xx.

Method of Administration.—℞ Novaspirin., gr. xv, pulveres, tabellæ, vel capsulæ no. 6.

Sig.—One, twice daily.

Uses.—Analgesic; antirheumatic.

Novocaina; Monohydrochloride of Para-amino-benzoyl-diethyl-amino-ethanol:



(soluble in one of water and 30 of alcohol).

$COO(CH_2CH_2N(C_2H_5)_2)HCl$.

Adult Dosage.—Gr. i-iii-viii.

Method of Administration.—For infiltration anæs

thesia: novocaine, 0.5 to 1 per cent., or, gr. iv, with epinephrine solution (1:1000), ggt. v-x, in physiologic salt solution, (0.8 per cent.) 1.6–3.2 ounces.

For conjunctival instillation: 1, 5 and 10 per cent. solution.

For nasopharyngo-laryngeal application: five to twenty per cent., with six to eight drops of adrenalin (1:1000) to each 10 cc., applied on a pledget of cotton for five minutes.

Physiologic Action and Uses.—Local anæsthetic (safe). It may be boiled repeatedly.

Nucis Vomicæ Extractum.

Adult Dosage.—Min., gr. ⅛; av., ¼; max., ½.

Method of Administration.—℞ Extracti nucis vomicæ, gr. ¼, pillulæ no. 30.

Sig.—Pill, t.i.d. Maximum in twenty-four hours, gr. ii.

Uses.—Bitter stomachic and tonic; general stimulant.

Toxic Action.—Muscular twitching, stiffness of the neck, slight vertigo, indigestion, muscular stiffness, increased reflex excitability, spasm of the neck of the bladder, slight disturbance of vision, dilatation of the pupils, restlessness, trembling, tetanic convulsions, paralysis. Diagnostic features are the rapid onset of the attack, affection of the jaw after the limbs and trunk, risus sardonicus, opisthotonus, relaxation between convulsions, retention of consciousness.

Nucis Vomicæ Tinctura.

Dosage.—6 months, gt. ss; 18 months, gt. i; 3 years, gtt. i–ii; 5 years, gtt. ii–iv. Adult, min., ♏v; av., x; max., xv.

Method of Administration.—℞ Tincturæ nucis vomicæ, ℥ss.

Sig.—Ten drops in water, t.i.d., gradually increased to twenty to twenty-five drops, t.i.d., if desired.

Mx contain approximately gr. 1/100 of strychnine.

Uses.—Bitter stomachic tonic; general stimulant.

Toxic Action.—See above.

Nucleinum.

Adult Dosage.—Min., gr. viii; max., xv, t.i.d.

Method of Administration.—Ten to sixty minims of a 5 per cent. solution are injected hypodermically, once a day, in cases of septicæmia in which there is little or no leucocytosis.

Physiologic Action and Uses.—Said to increase the number of leucocytes.

Nutmeg; Myristica.

Adult Dosage.—Min., gr. v; av., viiss; max., xv.

Uses.—Stomachic; carminative; astringent; relieves strangury.

Toxic Action.—Stupor; delirium.

Nutrose; Sodii Caseinas (a sodium salt of milk casein, containing 65 per cent. of proteins).

Uses.—Nutrient.

Oleatum Hydrargyri (yellow oxide HgO 25, distilled water 25, oleic acid to 100).

Adult Dosage.—Min., gr. ½; max., ⅓.

Uses.—Antiluetic; alterative.

Oleatum Stanni; Oleate of Tin.

Oleatum Zinci.

Oleicum Acidum (practically insoluble in water; partially soluble in 60 per cent. alcohol).

Uses.—Emollient; solvent for making oleates.

Oleoresina Aspidii.—See Aspidii Oleoresina.

Oleoresina Copaiba.—See Copaibæ, Oleum.

Oleoresina Cubebæ; Oleum Cubebæ.—See Cubebæ.

Oleum Amygdalæ Amaræ; Oil of Bitter Almond (yields benzaldehyde about 85 per cent. and hydrocyanic acid about 3 per cent.).

Adult Dosage.—Min., ♏¼; av., ½; max., i.

Uses.—Flavoring agent; sedative.

Oleum Amygdalæ Expressum vel Dulcis; Oil of Sweet Almond.

Adult Dosage.—Min., ℥i; av., ℥i; max., iss.

Uses.—Emollient; nutritive; laxative.

Oleum Anisi.—See Anisi, Oleum.

Oleum Bergamottæ.

Uses.—Flavoring agent; perfume.

Oleum Betulæ Empyreumaticum Rectificatum; Oleum Rusci Rectificatum.

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—Used in a 2 to 10 per cent. ointment.

Uses.—Local stimulant and antiseptic.

Oleum Cadinum; Oil of Juniper Tar.

Method of Administration.—Used in a 1 to 10 per cent. ointment.

Uses.—Local stimulant and antiseptic.

Oleum Cajuputi.

Adult Dosage.—Min., ♏v; av., viii; max., x.

Method of Administration.—℞ Olei cajuputi, ℥i.

Sig.—♏i–iii in hot water every two hours.

Uses.—Carminative in flatulent colic.

Oleum Camphorata (10 per cent.); Camphorated Oil, not the liniment.

Dosage.—6 months, gtt. iii; 18 months, gtt. v; 3 years, gtt. v–x; 5 years, gtt. x. Adult, min., ♏xv; av., xxx; max., ℥i.

Method of Administration.—For collapse: Sterilize by heat, and inject deep into the muscle every hour or two; or inject 0.5 cc. every fifteen minutes for four doses if necessary. This is not the camphorated oil of the shops. The latter is Linimentum Camphoræ, which should not be used hypodermically.

Physiologic Action and Uses.—General stimulant; mild local rubefacient.

Oleum Caryophylli; Oil of Clove.

Adult Dosage.—Min., ♏i; av., iii; max., iv.

Uses.—Local anæsthetic; antiseptic, counter-irritant; carminative.

Oleum Cassiæ; Oleum Cinnamomi.—See Cinnamomi, Oleum.

Oleum Chaulmoograe; Oleum Gynocardiæ. See Chaulmoograe.

Oleum Chenopodii; Oil of American Wormseed (should be kept in well-stoppered amber-colored bottles in a cool, dark place).

Dosage.—18 months, gt. iss; 3 months, gtt. iii; 5 years, gtt. v. Adult, min., ♏v; av., x; max., xv. Each minim equals about 2½ drops.

Method of Administration.—For hookworm disease the following treatment is recommended: Cleanse the bowels the evening before, then give one drop of the oil for every year of age up to fifteen, in a teaspoonful of granulated sugar, every two hours for three doses, followed two hours later by a good dose of castor-oil.

"Subminimal doses, repeated at intervals of several days, become toxic" (Epitome of the U. S. P. and N. F.)

Physiologic Action and Uses.—Anthelmintic, especially for round-worms and hook-worms.

Toxic Action.—Cardiovascular and respiratory depression; bradycardia, fall of blood-pressure, albuminuria, somnolence, coma, paralysis.

Oleum Cinereum. See Gray Oil.

Oleum Cinnamomi; Oleum Cassiæ. See Cinnamomi, Oleum.

Oleum Coca-nucis.

Oleum Copaibæ; Oleoresina Copaibæ. See Copaibæ, Oleum.

Oleum Cubebæ; Oleoresina Cubebæ. See Cubebæ.

Oleum Eucalypti. See Eucalypti, Oleum.

Oleum Fœniculi (nearly insoluble in water; soluble in alcohol).

Adult Dosage.—Min., ♏ii; av., iii; max., v.
Uses.—Carminative.

Oleum Gaultheriæ; Oil of Wintergreen; Methyl Salicylas. See Gaultheriæ, Oleum.

Oleum Gossypii Seminis. See Cottonseed Oil.

Oleum Gurjunæ. See Gurjunæ, Balsamum.

Oleum Gynocardiæ. See Chaulmoogræ, Oleum.

Oleum Hedeomæ; Oil of Pennyroyal.
Adult Dosage.—Min., ♏i; av., iii; max., x.
Method of Administration.—℞ Olei hedeomæ, ♏iii, capsulæ no. 12.
Sig.—One capsule, t.i.d.p.c.
It may be prescribed on sugar.
Uses.—Stimulant; carminative; emmenagogue.
Toxic Action.—Narcosis.

Oleum Juniperi. See Juniperi, Oleum.

Oleum Lavandulæ; Oil of Lavender.
Adult Dosage.—Min., ♏i; av., iii; max., v.
Uses.—Flavoring and perfume.

Oleum Limonis; Oil of Lemon.
Adult Dosage.—Min., ♏i; av., iii; max., v.
Uses.—Flavoring agent.

Oleum Lini; Linseed or Flaxseed Oil.
Adult Dosage.—Min., ℥ss; av., i; max., ii.
Uses.—Laxative; emollient.

Oleum Menthæ Piperitæ; Oil of Peppermint.
Adult Dosage.—Min., ♏i; av., iii; max., v.
Method of Administration.—℞ Olei menthæ piperitæ, ℥i.
Sig.—Three drops in hot water, every two hours.
Uses.—Carminative and flavoring agent; local anodyne.

Oleum Menthæ Viridis; Spearmint Oil.
Adult Dosage.—Min., ♏ii; av., iii; max., v.
Method of Administration.—℞ Olei menthæ viridis, ℥i.
Sig.—Three to five drops in hot water, every two hours.
Uses.—Carminative; flavoring vehicle.

Oleum Morrhuæ.—See Codliver Oil.

Olei Morrhuæ Emulsum, U. S. P.—See Codliver Oil Emulsions.

Olei Morrhuæ cum Hypophosphitibus Emulsum, U. S. P.—See Codliver Oil Emulsions.

Olei Morrhuæ cum Malto Emulsum N. F.—See Codliver Oil Emulsions.

Olei Morrhuæ cum Vitello Emulsum.—See Codliver Oil Emulsions.

Oleum Myrti; Myrtol; Oil of Myrtle.—See Myrtol.

Oleum Olivæ; Sweet Oil.
Dosage.—6 months, gtt. xv; 18 months, gtt. xv–xxx; 3 years, ℥ss–i; 5 years, ℥i. Adult, min., ℥i; av., iv; max., vi.
Method of Administration.—℞ Olei olivæ, ℥viii.
Sig.—Tablespoonful, t.i.d.p.c.
As a laxative, ℥ii–vi, twice daily.
As an enema, five to sixteen ounces, high into the colon.
Uses.—Emollient; laxative; nutrient.

Oleum Origani.
Adult Dosage.—Av., ♏v.
Method of Administration.—℞ Olei origani, ℥i.
Sig.—Five drops in hot water, three or four times a day.
Uses.—Stimulant; carminative.

Oleum Phosphoratum N. F. (1 per cent. dissolved in ether and added to expressed oil of almond; should be recently made; gr. 1/100 of phosphorus to each minim).
Dosage.—6 months, gt. ss; 18 months, gt. i; 3 years, gtt. iss; 5 years, gtt. ii–iv. Adult, min., ♏i; max., iii.
Method of Administration.—℞ Olei phosphorati, ℥i.
Sig.—One minim, on the tongue, gradually increased to three or four minims, t.i.d.p.c.
Physiologic Action and Uses.—Alterative; aphrodisiac; stimulates metabolism, causing increased growth and new formation of tissues (red blood-cells, bone, etc.); inhibits oxidation; used principally in rickets.
Toxic Action.—Acute poisoning is manifested by nausea, garlic eructations, pain and burning in the stomach, vomiting, sometimes diarrhœa; after several days, fatty degeneration of the organs with vomiting of blood, drowsiness, enlarged painful liver and scanty urine; later perhaps delirium, somnolence, coma, and occasionally convulsions.
Chronic poisoning is manifested by necrosis of the lower jaw, and fatty degeneration of the various organs, followed by a proliferation of the connective tissue:—anæmia, general debility, slight jaundice, indigestion, diarrhœa.

Oleum Picis Liquidæ Rectificatum; Rectified Oil of Tar (nearly insoluble in water; soluble in alcohol).
Adult Dosage.—Min., ♏i; av., iii; max., v.
Method of Administration.—℞ Olei picis liquidæ rectificati, ♏iii, capsulæ no. 12.
Sig.—A capsule every three hours.
Uses.—Antiseptic; irritant; parasiticide; irritant expectorant.

Oleum Pini Pumilionis; Dwarf Pine Needle Oil (nearly insoluble in water; soluble in alcohol).
Method of Administration.—℥ss to Oi of steaming water, as an inhalation.
Uses.—Bronchial sedative.

Oleum Pini Sylvestris; Scotch Fir Oil.
Method of Administration.—℥ss to Oi of steaming water, as an inhalation.
Uses.—Bronchial sedative.

Oleum Ricini; Castor-Oil.—See Castor-Oil.

Oleum Rosæ; Attar of Rose.
Uses.—Perfume.

Oleum Rosæ Geranii.
Uses.—Perfume.

Oleum Rusci Rectificatum. See Oleum Betulæ.

Oleum Rutæ; Oil of Rue.
Adult Dosage.—Min., ♏i; av., ii; max., v.
Uses.—Emmenagogue; aphrodisiac.
Toxic Action.—Gastro-enteritis; prostration; convulsions; strangury; anuria; narcosis.

Oleum Sabinæ; Oil of Savin: $C_{10}H_{16}$.
Adult Dosage.—Min., ♏i; av., ii; max., iv.
Uses.—Emmenagogue.
Toxic Action.—Gastro-enteritis; hæmaturia; dysuria; narcosis.

Oleum Santali; Oil of Sandalwood.
Adult Dosage.—Min., ♏v; av., x; max., xx.
Method of Administration.—℞ Olei santali, ♏x, capsulæ no. 12.
It may be prescribed in emulsion, but better in capsule.
Sig.—One, t.i.d.p.c.
Physiologic Action and Uses.—Urinary astringent and antiseptic; useful in subacute gonorrhœa and ammoniacal cystitis due to pyogenic cocci; bronchopulmonary antiseptic and deodorizer.
Toxic Action.—Gastric and intestinal irritation, lumbar pain.

Oleum Sassafras.
Adult Dosage.—Min., ♏i; av., iii; max., iv.
Uses.—Flavor; rubefacient.

Oleum Sesami; Teel Oil; Benne Oil.
Uses.—Emollient; substitute for olive-oil.

Oleum Sinapis Volatile; Mustard Oil; Allyl Sulpho-cyanide; C_4H_5NS.
Adult Dosage.—Min., ♏½; max., ¼.
Uses.—Vesicant.

Oleum Tanaceti; Oil of Tansy.
Adult Dosage.—Min., ♏ii; max., x.

Method of Administration.—℞ Olei tanaceti, ♏viii, pilulæ vel capsulæ no. 24.

Sig.—One, t.i.d. It may also be administered on sugar.

Uses.—Emmenagogue; diuretic; anthelmintic.

Toxic Action.—Abdominal pain, vomiting, unconsciousness, convulsions.

Oleum Terebinthinæ Rectificatum $C_{10}H_{16}$; Rectified Oil or Spirits of Turpentine (a mixture of pinene, $C_{10}H_{16}$, with small amounts of other terpenes and traces of organic acids; insoluble in water; soluble in 3 of alcohol; soluble in oil).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Olei terebinthinæ rectificati, ℥ss.

Sig.—Five to fifteen drops on sugar, bread, or in milk, three to six times daily, together with plenty of water. It may also be prescribed in capsule.

As an enema: ℥ss–i–iv to the quart of soapsuds. As a hot stupe: ten to twenty drops to the pint.

Physiologic Action and Uses.—Counter-irritant; external and intestinal antiseptic; anthelmintic; carminative; irritating diuretic; hæmostatic; broncho-pulmonary antiseptic and deodorizer; stimulant.

Olei Terebinthinæ Emulsum (rectified oil 15, expressed oil of almond 5, syrup 25, acacia 15, water to 100).

Adult Dosage.—Min., ℥ss; av., i; max., ii+.

Method of Administration.—℞ Emulsi olei terebinthinæ, ℥iv (♏iii per dram).

Sig.—Teaspoonful, three to six times daily, together with lots of water. The taste may be disguised with oil of gaultheria, ♏i to the dose.

℞ Olei terebinthinæ rectificati, ℥i, ℈i (♏x per dose); olei gaultheriæ, ♏viii; glycerini, ℥i; mucilaginis acaciæ, ℥i; aquæ, *q.s.* ad ℥iv.

Misce et fiat emulsum.

Sig.—Tablespoonful, three to six times daily, with lots of water.

Oleum Theobromatis; Cacao Butter (melts at body temperature).

Uses.—Emollient; lubricant in massage; suppository basis.

Oleum Thymi; Oil of Thyme.

Adult Dosage.—♏i; av., iii; max., v.

Oleum Tiglii; Croton Oil.—See Croton Oil.

Olive-Oil; Sweet Oil; Oleum Olivæ.—See Oleum Olivæ.

Opii Extractum (1 gm. represents about 2 gms. opium).

Adult Dosage.—Min., gr. ¼; av., ½; max., ii.

Method of Administration.—Prescribe in pill form; gr. ss contains about gr. ⅒ of morphine.

Uses.—See Morphine.

Toxic Action.—Myosis, sometimes nausea and vomiting, slowing of the respiration and pulse, the latter later becoming rapid, diminished reflexes, deepening stupor, coma.

Opii Pilulæ (pulveris opii, gr. i; morphinæ gr. ⅛).

Adult Dosage.—Min., 1; max., 3.

Opii Pulvis (gr. i contains of morphine gr. ⅛).

Adult Dosage.—Min., gr. ss; av., i; max., iii.

Opii, Pulvis Ipecacuanhæ et; Dover's powder.—See Dover's Powder.

Opii Tinctura; Laudanum. See Laudanum.

Opii Tinctura Camphorata; Paregoric (pulv. opii 4, benzoic acid 4, camphor 4, oil of anise 4, glycerine 40, diluted alcohol to 1000).

Dosage.—6 months, gtt. iii–v; 18 months, gtt. x; 3 years, gtt. xv–xx; 5 years, gtt. xx–xxx. Adult, min., ℥i; av., ii; max., iv.

Method of Administration.—Wachenheim gives one minim for each two pounds of the infant's weight. ℥iv contains nearly one grain of powdered opium, or gr. ⅛ of morphine.

Opii Tinctura Deodorati.

Dosage.—6 months, ⅛♏; 18 months, ♏¼–½; 3 years, ♏i; 5 years, ♏ii–iii; adults, ♏v–x–xxx; ♏x is equivalent to powdered opium gr. i, or morphine g ⅛.

Opii, Tinctura Ipecacuanhæ et.—See Ipecacuanhæ et Opii, Tinctura.

Opii, Syrupus Ipecacuanhæ et; Syrup of Dover's Powder, N. F. (tr. of ipecac and opium, 8.5 per cent., flavored with spirit of cinnamon and cinnamon water in syrup).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Optochin; Ethylis Hydrocupreinæ Hydrochloridum (a quinine alkaloid) $C_{19}H_{22}N_2.OH.O.C_2H_5.HCl$.

Adult Dosage.—Gr. viiss, t.i.d.

Method of Administration.—One to two per cent. aqueous solution, freshly prepared, or 1 to 2 per cent. solution in oil or ointment: specific in serpent ulcer of the cornea due to the pneumococcus; 1 to 2 per cent. solution as a gonococcocide.

For pneumonia, 0.024 gram per kilogram of body weight every twenty-four hours is required to produce a bactericidal action in the blood serum. Thus for the average sized individual, the amount for twenty-four hours is 1.5 grams, administered as follows: initial dose 0.45 grams, followed every three hours by 0.15 gram; second twenty-four hours, ten doses of 0.15 gram; best given in capsule (Allan M. Chesney.)

Uses.—Antiseptic; antipneumococcic.

Toxic Action.—Tinnitus, deafness, amblyopia, amaurosis, retinitis.

Orange. See Aurantium.

Orexinum Basicum; Phenyl-dihydrochinazolin.

Adult Dosage.—Min., gr. iss; max., v.

Method of Administration.—℞ Orexini; gr. 5, tabellæ vel capsulæ no. 12.

Sig.—A tablet, t.i.d., or b.i.d.a.c., followed by a draught of warm water, milk, or beef tea.

Uses.—Stomachic; appetizer.

Orexinum Tannicum.

Adult Dosage.—Min., gr. iv; av., viii; max., xii.

Method of Administration.—℞ Orexini tannici, gr. viii, capsulæ no. 12.

Sig.—A capsule t.i.d., or b.i.d.a.c., followed by a draught of warm water, milk, or beef tea.

Uses.—Stomachic; appetizer.

Origani Oleum.

Adult Dosage.—Av., ♏v.

Method of Administration.—℞ Olei origani, ℥i.

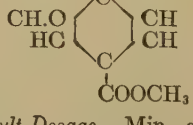
Sig.—Five drops in hot water, three or four times a day.

Uses.—Stimulant; carminative.

Orthoformum; Meta-Amino-Para Oxybenzoate of Methyl:

$C_6H_3.NH_2.OH.CO.O.(CH_3)$, 3 : 4 : 1, (scarcely soluble in water)

or



Adult Dosage.—Min., gr. v; av., x; max., xv.

Method of Administration.—℞ Orthoformi, gr. lxxx; mucilaginis acaciæ, ℥ii; aquæ, *q.s.* ad ℥iv.

Misce et fiat emulsum.

Sig.—Tablespoonful (gr. x) three to eight times daily as required. It is used in the form of a lozenge, for painful mouth; as a powder, for wounds; mixed with milk sugar for insufflation; dissolved in ether and mixed in oil for pencilings; mixed with lanolin as a salve.

Physiologic Action and Uses.—Local anæsthetic

to abraded surfaces, *e.g.*, gastric ulcer and cancer, etc. Since it acts only on abraded or ulcerated surfaces, the relief of pain probably indicates the presence of ulceration.

Toxic Action.—Used as a dusting powder on ulcers, it may cause œdema, eczema, and gangrene.

Oubain.—See Strophanthin.

Ovariæ Glandulæ Dessicatæ; Ovarin.

Adult Dosage.—Min., gr. iii; max.,v.

Method of Administration.—℞ Ovariæ glandulæ siccæ, gr. v, tabellæ no. 60.

Sig.—Tablet three or four times a day

Physiologic Action and Uses.—Used in the menopause or ovarian insufficiency.

Ovoferrin; Ferri Vitellinum Syntheticum.

Adult Dosage.—Min., ʒii; max., iv.

Method of Administration.—℞ Ovoferrin, ʒviii.

Sig.—Tablespoonful in water, t.i.d.a.c.

Uses.—Hæmatinic.

Oxalicum Acidum: COOH
COOH
(soluble in 10 of water).

Adult Dosage.—Min., gr. 1/10; av., 1/4; max., 1/2.

Method of Administration.—℞ Acidi oxalici, gr. iv; syrupi limonis, ʒii.

M. Sig.—One dram, t.i.d.

Uses.—Emmenagogue.

Toxic Action.—Burning pain in the throat and abdomen, vomiting; small, irregular pulse, collapse, stupor, sometimes convulsions, respiratory paralysis.

Oxgall Extract; Extractum Fellis Bovis.

Adult Dosage.—Av., gr. iss.

Method of Administration.—℞ Extracti fellis bovis, gr. iss, pilulæ vel capsulæ (hardened with formalin) no. 12.

Sig.—One pill, t.i.d.p.c.

Uses.—Cholagogue; laxative; intestinal antiseptic; aids in the absorption of fats.

Oxygenium; Oxygen: O_2.

Method of Administration.—Oxygen should be administered very slowly through a funnel draped with a curtain and held over the mouth and nose. Pure oxygen, says L. E. Hill, may be breathed for two to four hours continuously, without harm; and an atmosphere of 50 per cent. oxygen can be breathed indefinitely. "The cylinder valve must be opened wide enough to give a pleasant cool current (as tested upon the lips), and drive the exhaled CO_2 out of the mask" (L. E. Hill).

Physiologic Action and Uses.—Used in asphyxia, carbon-monoxide poisoning, etc.

Pancreatini Liquor N. F. (pancreatin 1.75 per cent., sod. bicarb. 5 per cent., with comp. spt. of cardamom, sod. chloride and chloroform in alcohol, glycerine, and water).

Adult Dosage.—Av., ʒi.

Method of Administration.—℞ Liquoris pancreatini, ʒiv.

Sig.—Teaspoonful t.i.d.p.c., in achlorhydria. It is destroyed by the acid of normal gastric juice.

To peptonize milk, add one-third water to fresh cow's milk, boil, cool, add liquor pancreatini, ʒi–ii, to each pint, and keep in a warm place (about 40° C) for one hour.

Uses.—Proteolytic, amylolytic, and lipolytic.

Pancreatinum (contains trypsin, amylopsin, and steapsin).

Adult Dosage.—Min., gr. iii; av., viii; max., xv.

Method of Administration.—℞ Pancreatini, gr. viiss, pilulæ (salol-coated) vel capsulæ (hardened with formalin) no. 30.

Sig.—One pill t.i.d.p.c.

Physiologic Action and Uses.—Proteolytic, amylolytic, and lipolytic; used in pancreatic insufficiency. It is destroyed by acids.

Pancreon (Pankreon) (pancreatin with about 8 per cent. of tannin).

Dosage.—5 years, gr. i–v. Adult, min., gr. iv; max., xv.

Method of Administration.—℞ Pancreon., gr. vi–x, pilulæ (salol-coated) no. 30.

Sig.—One pill, t.i.d.

Physiologic Action and Uses.—Astringent; digestant; used in pancreatic insufficiency.

Panopepton (predigested beef and wheat with sherry wine; 500 gm. furnishes 495 calories, of which 155 are due to protein and 340 to carbohydrates).

Adult Dosage.—ʒi-ii. Several times a day and at bedtime. For infants, from a few drops to thirty minims.

Uses.—Concentrated liquid food.

Papayotin; Papain; Papoid; Papaiva (a proteolytic ferment obtained from the Carica Papaya tree of South America); soluble in water but not in alcohol.

Adult Dosage.—Min., gr. i; av., ii; max., v.

Method of Administration.—℞ Papayotin, gr. ii, pilulæ no. 30.

Sig.—One pill, t.i.d. It may be dispensed in aqueous solution.

Uses.—Proteolytic.

Paraffinum (solid).

A preparation melting at 41° to 45° C. (105.8° to 113° F.) is used for prosthetic purposes in surgery.

Paraffinum Liquidum Purificatum; Petrolatum Liquidum; Mineral Oil.

Adult Dosage.—Min., ʒss; max., iii.

Method of Administration.—℞ Paraffini liquidi purificati, ʒviii.

Sig.—One-half to three ounces a day, in a single dose on retiring, or in divided doses; or two teaspoonfuls to two tablespoonfuls, one-half hour before meals, two to three times a day. Do not give it with or after meals to avoid indigestion. Remove the taste with warm water, milk, or a bite of dry bread.

Uses.—Laxative, emollient, vehicle.

Paraffinum Molle; Petrolatum Molle; Vaseline (white vaselin is soft paraffine which has been filtered through animal charcoal).

Uses.—Base for ointments; protective emollient.

Paraldehydum: $(CH_3COH)_3$ (soluble in 8 of water, and in all proportions with alcohol).

Adult Dosage.—Min., ♏xx; av., xxx; max., ʒii.

Method of Administration.—℞ Paraldehydi, ʒi.

Sig.—One-half to one teaspoonful, in water or diluted brandy, or better with cracked ice or ice-cold liquids, at bedtime.

℞ Paraldehydi, ʒii (ʒss per dose); elixiris aromatici, *q.s.* ad ʒii.

M. Sig.—Tablespoonful at bedtime.

Physiologic Action and Uses.—Rapid and reasonably safe hypnotic, acting in ten to fifteen minutes; promotes sleep by impairing the perception of external stimuli.

Toxic Action.—Headache, excitement, salivation, vasomotor and respiratory and cardio-vascular depression. From habitual use, dyspepsia, anæmia, cardiovascular depression, emaciation, insanity.

Parathyroideæ Extractum.

Adult Dosage.—Av., gr. 1/4.

℞ Extracti parathyroideæ, gr. 1/4, pulveres no. 21.

Sig.—Powder, t.i.d.

Uses.—Alterative.

Toxic Action.—Muscular tremor.

Paregoric; Tinctura Opii Camphorata (pulv. opii 4, benzoic ac. 4, camphor 4, oil of anise 4, glycerine 40, diluted alcohol to 1000).

Dosage.—6 months, gtt. iii–v; 18 months, gtt. x;

3 years, gtt. xv–xx; 5 years, gtt. xx–xxx. Adult, min., ʒi; av., ii; max., iv.

Wachenheim gives one minim for each two pounds of the infant's weight. ʒiv contains nearly one grain of powdered opium, or gr. ⅛ of morphine.

Uses.—See Morphine.

Pareiræ Fluidextractum.

Adult Dosage.—Min., ɱx; av., xxx; max., ʒi.

Method of Administration.—℞ Fluidextracti pareiræ, ʒii.

Sig.—Half to one teaspoonful, in plenty of water, three to four times a day.

Uses.—Bitter tonic; diuretic; laxative.

Pareiræ Infusum (ʒad Oi).

Adult Dosage.—Min., ʒi; max., ii.

Method of Administration.—℞ Infusi pareiræ, Oi.

Sig.—One to two ounces, three to four times a day, with plenty of water.

Uses.—Bitter tonic; diuretic; laxative.

Parolein; Paroline. See Petrolatum Liquidum.

Pelletierinæ Tannas (a mixture of four active alkaloids from pomegranate).

Adult Dosage.—Min., gr. iii; av., iv; max., v.

Method of Administration.—℞ Pelletierinæ tannatis, gr. iv, capsulæ no. 1.

Sig.—Take in the morning, fasting, and follow in one to two hours by a brisk castor-oil purge. The powder may also be administered suspended in water. It should be preceded by a day of mild purging and light diet.

Physiologic Action and Uses.—Anthelmintic and teniafuge; no more than five grains should be given, for fear of paralysis.

Toxic Action.—Dizziness, confusion, faintness, weakness, occasionally serious disturbances of vision.

Pennyroyal Oil of; Oleum Hedeomæ. See Oleum Hedeomæ.

Pepo; Pumpkin Seed.

Dosage.—3 years, ʒi+; 5 years, ʒi+. Adult, min., ʒss–i; av., ii; max., iv.

Method of Administration.—Beat up into an emulsion with sugar and water, take on an empty stomach, and follow in two hours by a brisk cathartic.

Uses.—Anthelmintic; teniafuge.

Peppermint. See Mentha Piperita.

Pepsini Essentia.

Dosage.—6 months, gtt. xx; 18 months, gtt. xxx–xl; 3 years, gtt. xl–ʒi; 5 years, ʒi. Adult, av., ʒi.

Method of Administration.—℞ Essentiæ pepsini, ʒii.

Sig.—A dose, t.i.d.p.c. Pepsin acts only in an acid medium. One cc. will curdle 250 cc. of milk at 38° C. in a few minutes.

Physiologic Action and Uses.—Proteolytic; milk-curdling; vehicle; used to prepare whey and junket (*q.v.*).

Pepsinum (soluble in 50 of water, nearly insoluble in alcohol).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii–iii; 5 years, gr. iii. Adult, min., gr. v; av., viii; max., xv.

Method of Administration.—℞ Pepsini, ʒiv (gr. x per dram); acidi hydrochlorici diluti, ʒi (ɱxx per dram); aquæ, *q.s.* ad ʒiii.

M. Sig.—One dram, in half a tumbler of sweetened albumen water, taken through a straw or glass tube, during or after meals. Rinse the mouth afterward with soda-water.

Physiologic Action and Uses.—Proteolytic, acting only in an acid medium.

Peptogenic Milk Powder.

Method of Use.—To peptonize milk add one-third water to fresh cow's milk, boil, cool, and add peptogenic milk powder, to the pint, and allow to stand in a warm place (about 40° C.) for one hour.

Uses.—Used to peptonize milk.

Peptonized Milk. See Liquor Pancreatini, and Peptogenic Milk Powder, above.

Peptonoids, Beef or Dry (a powder consisting of partially peptonized beef, milk, and wheat gluten, and containing 40 per cent. of proteins and 52 per cent. of carbohydrates. Liquid peptonoids is the same in liquid form).

Adult Dosage.—ʒii–iv in water, milk, wine, broths, soups, etc., or in gruels, first dissolved in water. One-half ounce represents about sixty-five calories.

Uses.—Concentrated food.

Peptonoids, Liquid; Liquid form of Beef Peptonoids. See above.

Adult Dosage.—ʒss–i three to six times daily.

Uses.—Concentrated liquid food. 500 gm. furnishes 410 calories, of which 125 are due to protein, and 285 to carbohydrates.

Perhydrol (H_2O_2, 30 per cent., free from acid).

Method of Administration.—Used locally in full strength, or diluted one-half to two-thirds with water.

Uses.—Antiseptic.

Peruvianum Balsamum. See Balsamum Peruvianum.

Petrolatum; Petroleum Jelly.

Uses.—Base for ointments; protective emollient.

Petrolatum Liquidum; Liquid Paraffin; Mineral Oil.

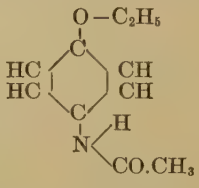
Adult Dosage.—Min., ʒss; max., iii.

Method of Administration.—℞ Paraffini liquidi purificati, ʒviii.

Sig.—One-half to three ounces a day, in a single dose on retiring, or in divided doses; or two teaspoonfuls to two tablespoonfuls, one-half-hour before meals, two or three times a day. Do not give it with or after meals for fear of disturbing digestion. Remove the taste with warm water, milk, or a bite of dry bread.

Uses.—Laxative emollient; vehicle.

Phenacetin; Acetphenetidinum:



(soluble in 1310 of water, 15 of alcohol).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years, gr. iss; 5 years, gr. ii. Adult, min., gr. v; av., x; max., xv.

Method of Administration.—℞ Acetphenetidini, gr. v. Mitte talis pulveres sive tabellæ vel capsulæ, no. 22.

Sig.—One powder or tablet as required, or about every three hours. Allow no more than gr. xx–lx in twenty-four hours, to an adult.

Physiologic Action and Uses.—Analgesic; nervous sedative; hypnotic; antipyretic, lessening heat production (comparatively safe). Local antiseptic.

Toxic Action.—Cardiovascular and respiratory depression, dyspnœa, sweating, cyanosis, vomiting, methæmoglobinemia and methæmoglobinuria, collapse.

Phenocoll Hydrochloridum; Aminoacetphenetidini Hydrochloridum: $C_6H_4.OC_2H_5NH(CH_2NH_2.CO)HCl$; soluble in 16 of water).

Adult Dosage.—Min., gr. v; max., xx.

Method of Administration.—℞ Phenocoll hydrochloridi, gr. v, pulveres no. 12.

Sig.—A powder, dissolved in water, three to four times a day, as required.

Uses.—Analgesic; antineuralgic; antipyretic.

Phenol. See Acidum Carbolicum.

Phenolatum Iodum; Iodized Phenol (usually, iodine 1, to phenol 4).

Uses.—Antiseptic and counter-irritant.

Phenolis Glyceritum. See Acidi Carbolici Glyceritum.

Phenolis Unguentum (phenol 3, white petrolatum 97).

Uses.—Antiseptic emollient.

Phenolphthaleinum; Dihydroxyphthalophenone $C_6H_4(OH)_2CO.C_6H_4CO$.

Dosage.—For children, gr. i–ii. Adult, min., gr. i; av., iv; max., viii.

Method of Administration.—℞ Phenolthaleini, gr. i, trochisci no. x.

Sig.—One or more at bedtime.

Uses.—Laxative.

Toxic Action.—Prolonged use irritates the kidneys.

Phenolsulphonas Sodii; Sodii Sulphocarbolas (soluble in 4.2 of water).

Adult Dosage.—Min., gr. ii; av., iv; max., x.

Method of Administration.—℞ Sodii phenolsulphonatis, gr. lxxx (gr. v per dram); aquæ, ʒii.

M. Sig.—One dram in water, three to four times daily.

Uses.—Local and internal antiseptic (?)

Phenolsulphonas Zinci; Zinci Sulphocarbolas (soluble in 1.6 of water, and in 1.8 of alcohol).

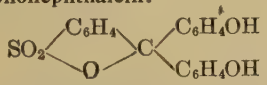
Adult Dosage.—Min., gr. i; av., ii; max., v.

Method of Administration.—℞ Zinci phenolsulphonatis, gr. xlviii (gr. iii per dram); aquæ, ʒii.

M. Sig.—One dram in water, three to four times daily.

Uses.—Local and internal antiseptic and astringent.

Phenolsulphonephthalein:



Used for determining the functional activity of the kidneys. See Urinalysis, Part 1.

Phenylcinchoninicum Acidum; Atophan.—See Atophan.

Phenylis Salicylas; Salol: $C_6H_4(OH)COOC_6H_5$ 1 : 2 (soluble in 6670 parts of water).

Dosage.—6 months, gr. ss; 18 months, gr. i–ii; 3 years, gr. ii; 5 years, gr. iii. Adult, min., gr. v; av., viiss; max., xv.

Method of Administration.—℞ Phenylis salicylatis, gr. v, capsulæ, tabellæ, vel pulveres no. 12.

Sig.—One, every two to four hours.

Physiologic Action and Uses.—Intestinal and urinary antiseptic by the liberation of phenol and salicylic acid; antirheumatic; antipyretic; diaphoretic.

Toxic Action.—Symptoms of salicylic acid poisoning, together with lumbar heaviness, smoky urine, and other phenol effects.

Phloridzin: $C_{21}H_{24}O_{10}+2H_2O$ (Glucoside).

Adult Dosage.—Min., gr. v; max., x (by mouth).

Uses.—Used for testing the functional activity of the kidneys. See Urinalysis, Part 1.

Phosphidum Zinci.

Adult Dosage.—Min., gr. 1/20; max., 1/12.

Method of Administration.—℞ Zinci phosphidi, gr. 1/8, pilulæ no. 30.

Sig.—One pill, t.i.d.

Phosphoratum Oleum (1 per cent. dissolved in ether and added to expressed oil of almond; should be recently made; gr. 1/100 of phosphorus to each minim).

Dosage.—6 months, gt. ss; 18 months, gt. i; 3 years, gt. iss; 5 years, gtt. ii–iv. Adult, min., ♏i; max., iii.

Method of Administration.—℞ Olei phosphorati, ʒi.

Sig.—One minim on the tongue, gradually increased to three to four minims, t.i.d.p.c.

Physiologic Action and Uses.—Alterative; aphrodisiac; stimulates metabolism, causing increased growth and new formation of tissues (red blood-cells bone, etc.); inhibits oxidation; used principally in rickets.

Toxic Action.—Acute poisoning is manifested by garlic eructations, pain and burning in the stomach, nausea and vomiting, sometimes diarrhœa, after several days fatty degeneration of the organs, with vomiting of blood, drowsiness, enlarged painful liver, and scanty urine; later perhaps delirium, somnolence, coma, and occasionally convulsions.

Chronic poisoning is manifested by necrosis of the lower jaw and fatty degeneration of the various organs followed by a proliferation of the connective tissue; anæmia, general debility, slight jaundice, indigestion, diarrhœa.

Phosphoricum Acidum Dilutum (10 per cent. of orthophosphoric acid, H_3PO_4).

Dosage.—6 months, gtt. i–ii; 18 months, gtt. ii–iii; 3 years, gtt. v; 5 years, gtt. x. Adult, min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Acidi phosphorici diluti, ʒii.

Sig.—Twenty drops in a wineglassful of water, t.i.d.

Physiologic Action and Uses.—Stomachic; alterative; refrigerant beverage.

Phosphori Elixir N. F. (Phos. 0.025 per cent., in chloroform, alcohol, glycerine, and water, flavored with comp. spt. of orange and oil of anise; ʒi contains of phosphorus gr. 1/67; deteriorates rapidly).

Adult Dosage.—Av. ʒi.

Method of Administration.—℞ Elixiris phosphori, N. F., ʒii.

Sig.—One dram, once a day, gradually increased to t.i.d.

Physiologic Action and Uses.—See above.

Toxic Action.—See above.

Phosphori Pilulæ (P. gr. 1/100 per pill; should be recently made).

Adult Dosage.—Min., 1; max., 4.

Method of Administration.—℞ Pilulæ phosphori, no. 60.

Sig.—One pill, gradually increased to four pills, t.i.d.

Physiologic Action and Uses.—See above.

Toxic Action.—See above.

Phosphorus (soluble in 17 of chloroform, in 400 of dehydrated alcohol).

Dosage.—6 months, gr. 1/200; 18 months, gr. 1/100; t.i.d. Adult, min., gr. 1/150; av., 1/120; max., 1/60, t.i.d. Administered in the form of pills or as phosphorated oil.

Physiologic Action and Uses.—See above.

Toxic Action.—See above.

Physiologic Salt Solution (0.85 per cent., or 8.5 gm. to 1000 c.c. of water; or about one dram to the pint).

Physostigmatis Extractum (about 2 per cent. of alkaloids).

Adult Dosage.—Min., gr. 1/16; av., 1/8; max., 1/4.

Method of Administration.—℞ Extracti physostigmatis, gr. 1/8, pilulæ no. 6.

Sig.—A pill once or twice daily. "Gr. i–iv are used in tetanus."—Potter.

Physiologic Action and Uses.—Physostigmine or eserine is the antagonist of atropine. It increases the excitability of autonomic or parasympathetic

nerve endings; causes myosis and contraction of the ciliary muscle (spasm of accommodation with resulting relaxation of the capsule of the lens and increased spheroidity of the latter, and diminution of intraocular tension); increases the secretion of tears, saliva, sweat, and the bronchial secretions; contracts the bronchial, gastro-intestinal and vesical muscles; increases the excitability of the nerve endings supplying striped or voluntary muscles; also renders more excitable the motor cortical centres, tending to convulsions; slows the heart; deepens respirations; depresses the vagus and the action of the spinal cord.

Toxic Action.—Muscular weakness and tremor, loss of reflex action, nausea, salivation, vomiting, severe intestinal colic, purging, sweating, myosis, headache, giddiness, fever, bradycardia, dyspnœa, motor paralysis.

Eserine in the eye may produce a feeling of great tension in the eye, headache, and nausea.

Physostigmatis Tinctura (about 0.015 per cent. of alkaloids).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Tincturæ physostigmatis ℥ii.

Sig.—Fifteen drops in water, once or twice daily.

Physostigminæ (Eserinæ; alkaloid: $C_{15}H_{21}N_3O_2$) **Salicylas** (soluble in 75 of water).

Adult Dosage.—Min., gr. 1/100; av., 1/60; max., 1/30.

Method of Administration.—℞ Physostigminæ salicylatis (vel sulphatis) gr. 1/60, tabellæ no. 6.

Sig.—One tablet, by mouth or hypodermically, once or twice a day. For the eye: gr. ii–iv ad ℥i of water or oil, or from 0.1 to 1 per cent.

Physostigminæ Sulphas (very soluble in water).

Adult Dosage.—Min., gr. 1/100; av., 1/60; max., 1/30.

Method of Administration.—See above.

Picis Carbonis Liquor N. F. (coal tar 20 per cent., quillaja and alcohol)

Uses.—Local antiseptic; stimulant.

Picis Liquidæ Infusum; Liquor Picis Alkalinus, N. F. (tar 25, pot. hydrox. 12.5, water to 100).

Uses.—Local antiseptic and stimulant.

Picis Liquidæ, Oleum Rectificatum; Rectified Oil of Tar (nearly insoluble in water; soluble in alcohol).

Adult Dosage.—Min., ♏i; av., iii; max., v.

Method of Administration.—℞ Olei picis liquidæ rectificati, ♏iii, capsulæ no. 12.

Sig.—A capsule every three hours.

Uses.—Antiseptic; irritant; parasiticide; irritant expectorant.

Picis Liquidæ Syrupus; Syrup of Tar (pine tar 0.5 per cent. in alcohol and syrup).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Syrupi picis liquidæ, ℥i.

Sig.—Teaspoonful every three hours.

Uses.—Irritant expectorant.

Picis Liquidæ Unguentum (pine tar 50, yellow wax 15, lard 35).

Method of Administration.—At first, strengths of 2 to 4 per cent. may be used, and gradually increased.

Uses.—Stimulating antiseptic; antipruritic.

Picricum Acidum (Trinitrophenol, $C_6H_2OH(NO_2)_3$; soluble in 78 of water and 12 of alcohol).

Uses.—Local antiseptic; analgesic, and coagulant.

A 1 per cent. solution (gr. lxxvii ad Oi) was once extensively used for burns. It should not be applied to a large surface for fear of absorption.

Toxic Action.—Nausea, vomiting, diarrhœa, strangury, anuria, yellow staining of the skin and mucous membranes.

Picrotoxinum, $C_{30}H_{34}O_{13}$ (soluble in 240 of water; in 9 of alcohol).

Adult Dosage.—Min., gr. 1/100; av., 1/80; max., 1/20.

Method of Administration.—℞ Picrotoxini, gr. 1/100-1/80, tabellæ no. 6.

Sig.—One, t.i.d.

Physiologic Action and Uses.—Anhidrotic; stimulates centrally all the cranial and sacral autonomic nerves.

Toxic Action.—Nausea, salivation, dizziness, drowsiness, perhaps stupor and convulsions.

Pilocarpi Fluidextractum (Jaborandi).

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti pilocarpi, ℥ss.

Sig.—♏xxx, in water, at night. Contraindicated if the heart is weak.

Physiologic Action and Uses.—Pilocarpine is the antagonist of atropine. It stimulates autonomic or parasympathetic nerve terminals and also the nerves of the sweat glands in the skin, but it does not affect the renal or lacteal secretions, but increases all others; stimulates involuntary nerve terminals (gastro-intestinal, uterine, etc.); promotes absorption of inflammatory exudate; myotic and ciliary stimulant; diaphoretic; sialogogue.

Toxic Action.—Cardio-vascular depression, respiratory depression, salivation, even pulmonary œdema, sweating, drowsiness, chilliness, pallor, weakness, giddiness, myosis, colicky pains in the intestines, muscular tremors.

Pilocarpinæ Hydrochloridum, alkaloid hydrochloride, $C_{11}H_{16}N_2O_2.HCl$ (soluble in 0.3 of water, and 3 of alcohol).

Dosage.—3 to 5 years, gr. 1/20. Adult Min., gr. 1/12; av., 1/8; max., 1/4.

Method of Administration.—℞ Pilocarpinæ hydrochloridi, gr. iii (2.5 per cent. sol.; 5 drops = gr. 1/8.) Aquæ destillatæ, ℥ii.

M. Sig.—Five drops in water, twice or thrice daily, increased rapidly by one drop at a time, until slight sweating and salivation are produced, and then continued for two or more months, if necessary. Gr. 1/12 to 1/8 may be administered hypodermically. As a myotic, 1 to 2 per cent. solution, instilled into the eye.

Pilocarpinæ Nitras $C_{11}H_{16}N_2O_2.HNO_3$ (soluble in 4 of water, and 75 of alcohol).

For dosage, action, and uses, etc., see above.

Pilulæ Aloes.

Adult Dosage.—Min., 1; av., 2; max., 5 pills at bedtime.

Uses.—Purgative.

Pilulæ Aloes et Ferri.

Adult Dosage.—Min., 1; av., 2; max., 5.

Method of Administration.—℞ Pilulæ aloes et ferri, no. 24.

Sig.—One pill, t.i.d.p.c.

Uses.—Purgative; hæmatic; emmenagogue.

Pilulæ Aloes et Myrrhæ.

Adult Dosage.—Min., 1; av., 2; max., 5.

Method of Administration.—℞ Pilulæ aloes et myrrhæ, no. 24.

Sig.—One pill, t.i.d.

Uses.—Purgative; emmenagogue.

Pilulæ Asafœtida (asafœtida gr. iii, soap gr. i).

Adult Dosage.—Min., 1; av., 2; max., 6.

Method of Administration.—℞ Pilulæ asafœtidæ, no. 24.

Sig.—One to two pills, four times a day; or six pills in one dose.

Uses.—Antispasmodic; nerve stimulant; carminative; stimulating expectorant; tonic; laxative; diuretic; diaphoretic; emmenagogue; aphrodisiac; anthelmintic.

Toxic Action.—Nausea, vomiting, purging.

Pilulæ Blaudii; Pilulæ Ferri Carbonatis, ($FeCO_3$).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3

years, gr. ii; 5 years, gr. ii Adult, min., gr. v; max., vii.

Method of Administration.—℞ Pilulæ ferri carbonatis (Blaudii), pulveris, recentis præparati, gr. v.

Dispense in gelatine capsules hardened with formalin (Sahli's glutoid capsules, grade ii of hardness), capsules no. 50.

Sig.—One pill, t.i.d.p.c., increased by one pill each week, until four to five pills are taken t.i.d.

Uses—Hæmatic.

Pilulæ Ferri Iodidi (FeI_2).

Adult Dosage.—Min., 1 pill; max., 2 pills.

Method of Administration.—℞ Pilulæ ferri iodidi, no. 60.

Sig.—Two pills, t.i.d.p.c.

Uses.—Hæmatic.

Pilulæ Lapacticæ (aloin gr. ¼, strychnine gr. 1/60, ext. belladonna gr. ⅛, ipecac gr. 1/16).

Adult Dosage.—Min., 1 pill; max., 2 pills.

Method of Administration.—℞ Pilulæ lapacticæ, no. 60.

Sig.—One to two pills at bedtime.

Uses.—Laxative.

Pilulæ Laxativæ Compositæ (aloin gr. ⅛, strychnine gr. 1/128, ext. belladonna gr. ⅛, ipecac gr. 1/16).

Adult Dosage.—Av., 2 pills at bedtime.

Uses.—Laxative.

Pilulæ Opii (pulveris opii gr. i); (morphine gr. ⅛).

Adult Dosage.—Min., 1; max., 3.

Physiologic Action and Uses.—See Morphine.

Pilulæ Phosphori (P gr. 1/100 per pill; should be recently made).

Adult Dosage.—Min., 1; max., 4.

Method of Administration.—℞ Pilulæ phosphori, no. 60.

Sig.—One pill, gradually increased to four pills, t.i.d.

Physiologic Action and Uses.—See Phosphorus.

Pilulæ Rhei Compositæ (rhubarb gr. ii, aloes 1½, myrrh 1, oil of peppermint gr. 1/10).

Adult Dosage.—Min., 1; av., 2; max., 5. Pills at bedtime.

Uses.—Laxative.

Pimentæ Aqua (allspice water).

Uses.—Carminative vehicle.

Pini Canadensis Extractum (Hemlock Spruce).

Pini Pumilionis Oleum; Dwarf Pine-Needle Oil (nearly insoluble in water; soluble in alcohol).

Method of Administration.—℥ss to Oi of steaming water, as an inhalation.

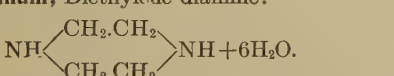
Uses.—Bronchial sedative.

Pini Sylvestris Oleum; Scotch Fir Oil.

Method of Administration.—℥ss to Oi of steaming water, as an inhalation.

Uses.—Bronchial sedative.

Piperazinum; Diethylene-diamine:



$$NH\langle \begin{matrix} CH_2.CH_2 \\ CH_2\ CH_2 \end{matrix} \rangle NH + 6H_2O.$$

(soluble in water; liquefies when exposed to the air).

Adult Dosage.—Min., gr. v; av., x; max., xv.

Method of Administration.—Dissolve fifteen to thirty grains in half a pint of water and add this to a pint of carbonated water. Administer this in divided doses throughout the day. A fresh solution should be made each day. The drug cannot be dispensed in powders, but in solution.

Uses.—Uric acid solvent.

Pituitary Extract; Pituitrin; Liquor Hypophysis (Posterior Lobe).

Adult Dosage.—Min., ♏v; max., xv.

Method of Administration.—Used hypodermically. Says H. H. Dale: "When a maximal dose has been given, further doses have practically no effect for a few hours."

Physiologic Action and Uses.—Uterine, intestinal, and cardio-vascular stimulant; promotes the contractility and increases the tone of involuntary and cardiac muscle; excites the activity of the mammary glands; useful in collapse, intestinal paresis and uterine atony.

Pituitary Gland, Dessicated (Anterior Lobe).

Adult Dosage.—Min., gr. i; max., iv.

Method of Administration.—℞ Hypophysis dessicatæ (anterior lobe), gr. i–iv, pulveres vel tabellæ no. 30.

Sig.—One, t.i.d.

Physiologic Action and Uses.—The anterior lobe of the hypophysis cerebri or pituitary body is related to the general growth of the body and especially of the skeleton. It may possibly be of service in infantilism, obesity associated with impotence, and the later stages of acromegaly.

Pituitary Gland, Dessicated (Posterior Lobe); Hypophysis Sicca.

Adult Dosage.—Min., gr. ss; max., iii.

Method of Administration.—℞ Hypophysis siccæ, gr. ss, capsulæ no. 60.

Sig.—Capsule, four times daily. Eight to ten gr. per diem may probably be given by mouth. Oral administration, however, is said to be ineffective.

Physiologic Action and Uses.—See above (Pituitary Extract).

Pix Burgundica; Burgundy Pitch. Softens and becomes adhesive at the body temperature.

Uses.—Rubefacient; basis for plasters.

Plumbi Acetas; Sugar of Lead: $Pb(CH_3COO)_2 + 3H_2O$ (soluble in 1.4 of water and 38 of alcohol).

Adult Dosage.—Min., gr. ss; av., i; max., v.

Method of Administration.—℞ Plumbi acetatis, gr. i, pilulæ no. 12.

Sig.—One pill, t.i.d.

Physiologic Action and Uses.—Bronchial and intestinal astringent and hæmostatic; a concentrated alcoholic solution is useful externally in ivy poisoning.

Toxic Action.—Acute poisoning: vomiting, purging or constipation, paralysis; collapse; coma. Chronic poisoning (plumbism): anorexia, pallor, emaciation, colic, constipation, wrist-drop, albuminuria, slow heart, arthritis, blue line along the margins of the gums, neuralgia, insanity.

Plumbi Emplastrum (lead acetate 60, soap 100).

Plumbi et Opii, Lotio; Lead and Opium wash.

Method of Preparation.—℞ Plumbi acetatis, gr. xxvii; tincturæ opii, ℥i; aquam ad ℥iii.

M. Sig.—For external use.

Uses.—Astringent; anodyne lotion.

Plumbi Subacetatis Ceratum (liq. plumbi subacetatis 20, camphor 2, wool-fat 20, paraffin 20, white petrolatum 38).

Uses.—Astringent application.

Plumbi Subacetatis Liquor; Goulard's Extract (lead acetate 18, lead oxide 11, distilled water to 100).

Method of Administration.—Diluted fifteen to thirty times with water.

Physiologic Action and Uses.—Astringent and cooling lotion; should not be applied to denuded surfaces.

Plumbi Subacetatis Dilutus Liquor; Lead Water (Goulard's Extract 4 per cent., with water).

Uses.—Astringent and cooling lotion.

Podophylli Resina.

Adult Dosage.—Min., gr. 1/20; av., 1/10; max., ½.

Method of Administration.—℞ Resinæ Podophylli, gr. ½, pilulæ no. 12.

Sig.—One pill, once or twice daily, as a laxative, two to six pills as a hydragogue cathartic.

Uses.—Slow, irritant cathartic.

Polantinum Liquidum ("Sterile immunized or antitoxic horse-serum with the addition of 0.25 per cent. carbolic acid").

Method of Administration.—Instil one drop in each conjunctival sac and in the nose, in the morning before arising, and repeat the treatment during the day "only when signs of irritation appear."—Dunbar. See Hay-Fever, Part 1.

Uses.—Pollen antitoxin in liquid form.

Polantinum Siccum ("Dried, sterile, pulverized antitoxic horse-serum with the addition of sterile powdered milk sugar").

Method of Administration.—Insufflate about a pinhead-sized amount of the powder in each conjunctival sac and in the nose in the morning before arising, and repeat the treatment during the day "only when signs of irritation appear."—Dunbar. See Hay-Fever, Part 1.

Uses.—Pollen antitoxin in powder form.

Pollen Extract; Pollen Vaccine (a solution of pollen protein).

Method of Administration.—To test the patient's susceptibility, one may rub a small quantity of vaccine into a scratch of the skin. Sensitiveness to that particular pollen is manifested by the appearance of an urticarial wheal. To determine the proper dosage in each individual case, make a series of scratches at a distance from the first test scratch, and apply to these 25 per cent., 10 per cent., 1 per cent., or even weaker dilutions of the vaccine. From five to ten minims of that dilution which fails to produce a reaction is injected hypodermically as the first dose. Every few days or a week gradually increasing doses are given until immunity is established.

Pomegranate. See Granatum.

Potassæ Liquor (KOH, 4.5 to 5.0 per cent).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Liquoris potassæ, ℥ss.

Sig.—Fifteen drops, well diluted, three to four times daily.

Physiologic Action and Uses.—Antacid; caustic: dissolves proteid and keratin.

Toxic Action.—Potassium salts in overdose are cardiac depressants.

Potassa Sulphurata (chiefly pot. polysulphides and pot. thiosulphate, very soluble in water).

Uses.—Parasiticide; cutaneous stimulant.

Potassii Acetas KCH_3COO (soluble in 0.5 of water and 2.9 of alcohol).

Dosage.—6 months, gr. i–ii; 18 months, gr. ii–iii; 3 years, gr. iii; 5 years, gr. v. Adult, min., gr. v; av., xv; max., xxx–℥i.

Method of Administration.—℞ Potassii acetatis, ℥iv (gr. xv per dram); aquæ, ℥ii.

M. Sig.—One dram, with plenty of water, three to four times daily.

Not more than one ounce of the salt in one day.

Uses.—Systemic alkali and diuretic; refrigerant.

Potassii et Antimonii Tartras (Tartar Emetic) soluble in 12 of water.

Dosage.—6 months, gr. 1/200; 18 months, gr. 1/150; 3 years, gr. 1/100; 5 years, gr. 1/100 Adult, min., gr. 1/16; av., gr. 1/10; max., gr. 1/4.

Method of Administration.—℞ Antimonii et potassii tartratis, gr. ½; syrupi rubi idæi, ℥i.

M. Sig.—℥i every hour.

℞ Antimonii et potassii tartratis, gr. 1/10.

Mitte talis tabellæ no. 8.

Sig.—Tablet in water every three to four hours.

Uses.—Stimulating, nauseant expectorant; diaphoretic.

Toxic Action.—Nausea and vomiting, prostration, fall of temperature, cardio-vascular depression, sweating, salivation, cramps in the limbs, cyanosis, delirium, exfoliative enteritis, suppression of urine, paralyses, convulsions, collapse.

Potassii Bicarbonas, $KHCO_3$ (soluble in 2.8 of water; almost insoluble in alcohol.)

Adult Dosage.—Min., gr. v; av., xv; max., xlv.

Method of Administration.—℞ Potassii bicarbonatis, ℥iv (gr. xv per dram); aquæ, ℥ii.

M. Sig.—One dram, in a glass of water, every four hours.

Uses.—Systemic alkali and diuretic; refrigerant.

Potassii Bitartras; Cream of Tartar, $KHC_4H_4O_6$.

Adult Dosage.—Min., gr. xx; av., xxx; max., ℥i.

Method of Administration.—Dissolve, for infants, ℥i–ii, and for children of five years and adults ℥ii–iv, in one or two pints of boiling water; allow to cool, flavor with sugar and lemon juice, and administer freely during the twenty-four hours.

Uses.—Diuretic; aperient; refrigerant (sol. in 155 of water).

Potassii Bromidum, KBr (soluble in 1.6 of water).

Dosage.—6 months, gr. i–iii; 18 months, gr. ii–iv; 3 years, gr. iii–v; 5 years, gr. v–viii. Adult, min., x; av., xv; max., lx.

Method of Administration.—℞ Potassii bromidi, ℥v ℈i (gr. x per dram); aquæ, ℥iv.

M. Sig.—One to three drams in half a tumbler of water or milk or an alkaline effervescent water, two to four times a day, p.c.

Physiologic Action and Uses.—Nervous sedative; cerebral depressant; anaphrodisiac; diminishes central reflex hyperexcitability.

Toxic Action.—Bromism is manifested by palatal and pharyngeal anæsthesia, with the absence of gagging on mechanical irritation, by sexual impotence, diminished reflexes, nervous and muscular depression, apathy, weakening of memory, pallor, lowered arterial tension and temperature, muddy complexion, acne, coated tongue, fetor oris, indigestion, emaciation, drowsiness, respiratory catarrh, rapid feeble heart.

Potassii Carbonas, K_2CO_3 (soluble in 0.9 of water, insoluble in alcohol).

Adult Dosage.—Min., gr. ii; av., xv; max., xx, well diluted, as an antacid.

Uses.—Alkaline caustic.

Potassii Chloras, $KC10_3$ (soluble in 11.5 of water).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years, gr. ii–iii; 5 years, gr. iii. Adult, min., gr. v; av., x; max., xv.

Method of Administration.—℞ Potassii chloratis, gr. lxxx (gr. v per dram); aquæ destillatæ, ℥ii.

M. Sig.—One dram, every two to three hours, or three to four times a day. Not more than 10 grains in twenty-four hours to infants, or fifteen grains in twenty-four hours to children of three years.

For local use, gr. x-xx to the ounce.

Method of Administration.—℞ Potassii chloratis, ℥i; glycerini, ℥iv; aquæ, *q.s.* ad ℥vi.

M. Sig.—Throat gargle.

Uses.—Astringent; antisialagogue.

Toxic Action.—Albuminuria, nephritis, cardiac depression, cyanosis, drowsiness, suppression of urine.

Potassii Chloratis Trochisci (pot. chlorate, gr. iiss, with sugar and tragacanth).

Adult Dosage.—Min., 1; max., 3.

Lozenges, slowly dissolved in the mouth, t.i.d.

Potassii Citras, $K_3C_6H_5O_7+H_2O$ (soluble in 0.8 of water; very slightly soluble in alcohol).

Dosage.—6 months, gr. ss–i; 18 months, gr. i–ii; 3 years, gr. iii; 5 years, gr. iv. Adult, min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Potassii citratis, ℥iv (gr. xv per dram); syrupi simplicis, et aquæ, aa ℥i.

M. Sig.—One dram, in a glass of water, three to

four times daily. Not more than one ounce of the salt in one day.

Physiologic Action and Uses.—Systemic alkali and diuretic; refrigerant. Diuresis is produced as follows: absorbed into the blood, the potassium salts by osmotic tension cause hydræmia or abstraction of fluid from the tissues; filtrated into the kidney tubules, the salt, by osmotic tension, causes a "renal diarrhœa."

Potassii Citras Effervescens (pot. cit. 20, sod. bicarb. 47.7, tartaric acid 25.2, citric acid 16.2).

Adult Dosage.—Min., ʒi; max., ii.

Method of Administration.—℞ Potassii citratis effervescentis, ʒii.

Sig.—Teaspoonful in a glass of water, three to four times a day.

Potassii Citratis Liquor (8 per cent.).

Adult Dosage.—Min., ʒiv; max., ʒi+.

Method of Administration.—℞ Liquoris potassii citratis, ʒiv.

Sig.—Tablespoonful, with plenty of water, three to four times a day.

Uses.—Alkaline diuretic; laxative.

Potassii Hydroxidum; Caustic Potash: KOH (soluble in 0.9 of water and 3 of alcohol).

Uses.—Antacid; caustic; solvent.

Toxic Action.—Local corrosion, pain, diarrhœa, convulsions, delirium.

Potassii Hydroxidi Liquor (KOH 4.5 to 5.0 per cent.).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Liquoris potassæ, ʒss.

Sig.—Fifteen drops, well diluted, three to four times daily.

Physiologic Action and Uses.—Antacid; caustic; dissolves proteid and keratin.

Potassii Hypophosphis: KH_2PO_2 (soluble in 0.6 of water and 9 of alcohol).

Adult Dosage.—Min., gr. v; av., viii; max., x.

Uses.—Alterative.

Potassii Iodidum: KI (soluble in 0.7 of water). M i (more than 1 drop) of a saturated solution contains about gr. i of KI.

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii–iii; 5 years, gr. iii. Adult, min., gr. v; av., viii; max., xx.

Method of Administration.—℞ Potassii iodidi, ʒiv; aquæ destillatæ, ʒiv.

M. Sig.—Five to eight drops, well diluted in water or milk, t.i.d.p.c., gradually increased even to twenty to sixty drops t.i.d. Every week, intermit the drug for four to five days.

Physiologic Action and Uses.—Expectorant; diuretic, discutient; alterative; antiluetic; relieves bronchial spasm, possibly, as suggested by Halsey, by stimulating the thyroid function, which stimulates the chromaffin organs with resulting increase of epinephrin, the latter producing relaxation of the bronchial muscles by stimulation of the sympathetic nerve-endings in the lungs; increases the amount of thyroidin in the thyroid gland.

Toxic Action.—Iodism: coryza, lacrimation, conjunctival injection, sneezing, respiratory catarrh, cough, salivation, sore throat, conjunctivitis, headache, tinnitus, swelling of the salivary glands, localized œdema (of the eye-lids, larynx), indigestion, nausea, vomiting, diarrhœa, saline or metallic taste in the mouth, neuralgic pains, anæmia, emaciation, acne, erythema, purpura, etc., mental depression.

Potassii Nitras; Saltpetre: KNO_3 (soluble in 2.8 of water).

Adult Dosage.—Min., gr. v; av., viii; max., xx, well diluted.

Uses.—Refrigerant; irritant diuretic; diaphoretic.

Potassii Nitratis Charta (paper impregnated with potassium nitrate).

Method of Administration.—Burn the paper and inhale the smoke. Used in asthma.

Potassii Permanganas: $KMnO_4$ (soluble in 13.5 of water).

Adult Dosage.—Min., gr. ss; av., i; max., iii.

Method of Administration.—℞ Potassii permanganatis, gr. i, pilulæ, no. 20.

Sig.—One pill, three to four times a day, p.c.

For irrigation: 1:4000–2000.

For ulcers: 1:1000–500.

Mouth and throat wash: gr. ¼–i ad ʒi.

Uses.—External and intestinal antiseptic and astringent (see Cholera Asiatica, Part 1); deodorant; emmenagogue.

Toxic Action.—Gastro-enteritis.

Potassii vel Sodii Silicatis, Liquor; Soluble Glass Solution. Painted on, in order to stiffen bandages, after the latter have been applied.

Potassii et Sodii Tartras; Rochelle Salt: $KNaC_4H_4O_6+4H_2O$ (soluble in 0.9 of water).

Dosage.—6 months, gr. xv; 18 months, gr. xxx; 3 years, ʒi–ii; 5 years, ʒiii–iv. Adult, min., ʒi; av., iiss; max., iv.

Method of Administration.—Dissolved in half a glass of water, one hour before breakfast. One-half to one teaspoonful may be given every one to two hours until purgation occurs.

Physiologic Action and Uses.—Saline cathartic; causing purgation by osmosis and interference with the absorption of fluids from the bowel; acts in one to twenty hours.

Potassii Tartras-boras (boric acid 1, pot. bitartrate 4, water 10 parts, heated together; soluble in 2 of water).

Adult Dosage.—Av., gr. xx.

Method of Administration.—℞ Potassii tartraboratis, ʒx ℈ii (gr. xx per dram); aquæ, *q.s.* ad ʒiv.

M. Sig.—One dram in a glass of water, three to four times a day.

Uses.—Uric acid solvent.

Potassii Telluras: K_2TeO_4.

Adult Dosage.—Min., gr. ¼; max., iss.

Uses.—Anhidrotic.

Precipitated Chalk; Calcii Carbonas Precipitatis: $CaCO_3$ (nearly insoluble in water and in alcohol).

Adult Dosage.—Min., gr. x; av., xv; max., xlv.

Method of Administration.—℞ Calcii carbonatis præcipitati, gr. xv–lx, pulveres no. 12.

Sig.—A powder two to three times daily.

Physiologic Action and Uses.—Antacid; intestinal astringent; neutralizes acids (fatty acids, sulphuric and phosphoric acids) in the intestine, and so deprives the urine of a portion of its acid constituents, rendering it less acid and even alkaline, and therefore favoring the solution of uratic deposits in the urinary tract.

Prepared Chalk; Creta Præparata (Purified Native $CaCO_3$).

Dosage.—6 months, gr. ii; 18 months gr. iii; 3 years, gr. v; 5 years, v–viii. Adult, min., gr. x; av., xv; max., lxxv.

Method of Administration.—℞ Cretæ præparatæ, ʒiv (gr. x to the dose); syrupi acaciæ, ʒii; aquæ cinnamomi, *q.s.* ad ʒiv.

Misce et fiat emulsum.

Sig.—One teaspoonful every three to four hours.

Uses.—Antacid; astringent.

Procaine.—See Novocaine.

Protargol; Argenti Proteinas (slowly soluble in 2 of water).

Method of Administration.—For instillations or injections: 0.25 to 1 per cent. solutions; 5 to 10 per cent. solutions in chronic urethritis or cystitis.

For irrigation: 1:2000 to 1000. Dissolve it in cold water.

Uses.—Antiseptic.

Pruni Virginianæ Fluidextractum.

Adult Dosage.—Min., ♏xx; av., xxx; max., xl.

Uses.—Bronchial sedative; flavor and vehicle.

Toxic Action.—Cardiac depression.

Pruni Virginianæ Syrupus (Syrup of Wild Cherry; contains HCN).

Dosage.—3 years, ℥ss; 5 years, ℥i. Adults, ℥ss-i-iss.

Uses.—Bronchial sedative; flavor and vehicle.

Toxic Action.—Cardiac depression.

Pulsatillæ Tinctura (10 per cent.), N. F.

Adult Dosage.—Av., ♏xxx.

Method of Administration.—℞ Tincturæ pulsatillæ, 10 per cent., N. F., ℥ii.

Sig.—Thirty drops, in water, t.i.d., for one week before the menstrual flow.

Uses.—Sedative; antispasmodic.

Toxic Action.—Gastro-intestinal irritation, nausea, vomiting, diarrhœa, hæmaturia, sweating, coryza, cough, vesiculo-pustular eruptions, ocular pain, amblyopia, stupor, coma, convulsions.

Pulvis Acetanilidi Compositus.—See Acetanilidi; Pulvis Compositus.

Pulvis Agarici Albi.—See Agarici Albi Pulvis.

Pulvis Anisi.—See Anisi Pulvis.

Pulvis Camphoræ.—See Camphoræ Pulvis.

Pulvis Catechu vel Gambir.—See Catechu Pulvis.

Pulvis Condurango.—See Condurango Pulvis.

Pulvis Cretæ Compositus.—See Chalk Powder Compound.

Pulvis Digitalis.—See Digitalis Pulvis.

Pulvis Effervescens Compositus; Seidlitz Powder: Blue Paper: Rochelle salt 120 gr., sod. bicarb. 40 gr. White Paper: Tartaric acid, 35 gr.

Adult Dosage.—Min., 1 pair; max., 2 pairs.

Method of Administration.—Dissolve the contents of each paper separately in water, and pour the two solutions together.

Uses.—Saline aperient.

Pulvis Gambir (Catechu).—See Catechu Pulvis.

Pulvis Glycyrrhizæ Compositus; Compound Licorice Powder.—See Glycyrrhizæ Pulvis Compositus.

Pulvis Hoang-Nan.—See Hoang-Nan, Pulvis.

Pulvis Ipecacuanhæ.—See Ipecacuanhæ, Pulvis.

Pulvis Ipecacuanhæ et Opii.—See Dover's Powder.

Pulvis Jalapæ Compositus.—See Jalapæ Pulvis Compositus.

Pulvis Kino Compositus.—See Kino Pulvis Compositus.

Pulvis Lobeliæ.—See Lobeliæ Pulvis.

Pulvis Opii.—See Opii Pulvis.

Pulvis Pepsini.—See Pepsinum.

Pulvis Pyrethri.—See Pyrethrum.

Pulvis Rhei.

Adult Dosage.—As a stomachic, Min., gr. i; max., v. As a laxative, Min., gr. x; av., xv; max., xxx.

Physiologic Action and Uses.—Stomachic; laxative (also somewhat astringent); acts chiefly on the colon.

Pulvis Rhei Compositus; Gregory's Powder (rhubarb 25, magnesia 65, ginger 10).

Adult Dosage.—Min., gr. xv; av., xxx; max., ℥i.

Method of Administration.—℞ Pulveris rhei compositi, ℥ii.

Sig.—One-half teaspoonful in water, two to three times a day.

Physiologic Action and Uses.—Stomachic; laxative (also somewhat astringent); acts chiefly on the colon.

Pulvis Sanguinariæ.

Adult Dosage.—Min., gr. i; av., ii; max., v.

Method of Administration.—℞ Pulveris sanguinariæ, gr. ii, pilulæ no. 12.

Sig.—One pill every two hours.

Uses.—Nauseant expectorant.

Pulvis Scammoniæ.

Adult Dosage.—Min., gr. i; av., iv; max., x.

Uses.—Cathartic.

Pulvis Scillæ (biologically assayed).

Adult Dosage.—Min., gr. i; av., iss; max., v.

Physiologic Action and Uses.—Expectorant; diuretic; slows and strengthens the heart, and raises the arterial pressure.

Toxic Action.—Vomiting, purging, strangury, hæmaturia, convulsions, paralysis.

Pulvis Stramonii.

Adult Dosage.—Min., gr. ss; av., i; max., iii.

Uses.—Used in "asthma powders."

Pulvis Valerianæ.

Adult Dosage.—Min., gr. x; av., xxx; max., xlv.

Method of Administration.—℞ Pulveris valerianæ, gr. **v**, capsulæ no. 6.

Sig.—One, t.i.d., the dose to be gradually increased to gr. xl, t.i.d., in diabetes insipidus.

Physiologic Action and Uses.—Nerve sedative; central nervous depressant. (?)

Pumpkin Seed; Pepo.

Dosage.—3 years, ℥i +; 5 years, ℥i +. Adult, min., ℥ss–i; av., ii; max., iv.

Method of Administration.—Beat up into an emulsion with sugar and water, take on an empty stomach, and follow in two hours by a brisk cathartic.

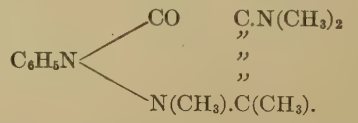
Uses.—Anthelmintic, teniafuge.

Pyoktanin; Methyl-Violet (soluble in 75 of water and in 12 of alcohol).

Method of Administration.—1 : 1000 solution, as a local antiseptic.

Uses.—Antiseptic.

Pyramidon; Dimethylaminoantipyrina:



(soluble in 11 of water).

Adult Dosage.—Min., gr. iv; av., vi; max., viii.

Method of Administration.—℞ Pyramidon, gr. vi, tabellæ vel capsulæ no. 10.

Sig.—One tablet as required. "Usually a single dose suffices for twenty-four hours" (N. and N. O. R.); but it may be repeated thrice daily. Give no more than gr. xl in twenty-four hours.

Physiologic Action and Uses.—Safe and efficient analgesic; antipyretic; hypnotic.

Pyrethrum; Pellitory Root.

Adult Dosage.—Min., gr. x; av., xxx; max., xlv.

To destroy mosquitoes, saturate the rooms with fumes of burning pyrethrum powder.

Uses.—Masticatory sialogogue; local irritant; insecticide.

Pyredina: C_5H_5N (alkaloidal base).

Adult Dosage.—Min., ♏v; max., xv; internally. By inhalation: "℥i, allowed to evaporate in an open dish in a small room, in which the patient is exposed for twenty to thirty minutes thrice daily, for the relief of asthma." (Potter.)

Pyrogallol; Pyrogallic Acid; Trihydroxybenzene: $C_6H_3(OH)_3$ (soluble in 1.7 of water, 1.3 of alcohol).

Adult Dosage.—Min., gr. i; max., ii.

Method of Administration.—Used only locally as a 5 per cent. ointment.

Uses.—Irritant antiseptic.

Toxic Action.—Methæmoglobinuria, jaundice. cyanosis, nephritis, uræmia.

Pyroligneum Acidum.

Method of Administration.—℥iii-v ad aquam Oii, as a vaginal douche in senile vaginitis (Bandler.)

Quassiæ Fluidextractum.

Adult Dosage.—Min., ♏v; av., x; max., xxx.

Method of Administration.—℞ Fluidextracti quassiæ, ℥i,

Sig.—Ten drops in water, t.i.d.a.c.

Physiologic Action and Uses.—Simple bitter stomachic; contains no tannin, so that it may be prescribed with iron.

Toxic Action.—Narcosis.

Quassiæ Infusum (Quassia chips ℥i, cold water ℥x, macerated for half an hour and strained).

Adult Dosage.—Min., ℥i; max., iii.

Method of Administration.—℞ Infusi quassiæ, ℥viii.

Sig.—Two tablespoonfuls to a wineglassful, t.i.d.

For pin-worms, ℥i-ii of the chips are macerated in Oi of boiling water, and the resulting solution injected high into the bowel.

Physiologic Action and Uses.—Simple bitter stomachic; anthelmintic.

Quassiæ Tinctura.

Adult Dosage.—Min., ♏v; av., xxx; max., ℥i.

Method of Administration.—℞ Tincturæ quassiæ, ℥ii.

Sig.—Half a dram in water, t.i.d.

Physiological Action and Uses.—Simple stomachic bitter; contains no tannin and may therefore be prescribed with iron.

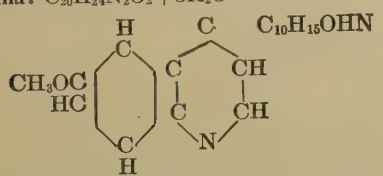
Quinidina: the dextrorotatory stereoisomer of quinine; occuring as one of the alkaloids of cinchona bark.

Adult Dosage.—Begin with a small dose, gr. iii, 3 or 4 times a day (because of a possible susceptibility); increase the next day to gr. vi.t.i.d., and later to gt. vi 4 or 5 times a day. Continue the treatment about a week. Normal rhythm is not established for about three days or longer. The drug is said to be effective in about 50 per cent. of cases of auricular fibrillation (most effective in recent cases), but relapses are to be expected. It should be tried only when other measures have failed. A restoration of normal rhythm is not necessarily accompanied by restoration of compensation of improvement in the subjective symptoms. One may, indeed, enjoy good health for many years with chronic auricular fibrillation without medical treatment.

Physiologic Action.—Depresses the irritability and conductivity of the auricles, causing a retardation of the auricular rate; the small rapid fibrillary waves becoming slower and larger as in flutter, with consequent rise of the ventricular rate produced by lessening of the auriculoventricular block. When the normal sinus rhythm is established, bradycardia occurs.

Toxic Effects.—Headache, faintness, anorexia,, nausea, vomiting, palpitation, increased heart rate, small soft pulse, precordial distress, collapse. These symptoms may precede restoration of normal rhythm.

Quinina: $C_{20}H_{24}N_2O_2+3H_2O$



(soluble in 1560 of water and 0.8 of alcohol; very soluble in dilute acids).

Dosage.—6 months, gr. i-ii; 18 months, gr. i-iii; 3 years, gr. ii-iii; 5 years, gr. iii-iv Adult, gr. v-x-xl.

Method of Administration.—For infants, no more than four doses of gr. i-ii in twenty-four hours.

For older children, fifteen to thirty gr. daily.

Quinine is best administered to infants in powdered form, dry on the tongue; to older children in syrup of glycerrhiza or syrup of yerba santa, which masks its bitter taste.

℞ Quininæ, gr. v—tabellæ vel capsulæ no. 25.

Sig.—One, three to four times daily, or every four, six or eight hours.

℞ Quininæ vel quininæ tannatis, gr. xxxii (gr. ii ad ♏xv); syrupi glycyrrhizæ vel eriodictyi, *q.s.* ad ℥ss.

M.Sig.—Fifteen to thirty minims, four times a day.

Physiologic Action and Uses.—Bitter tonic; analgesic; antipyretic; antiseptic; antimalarial; oxytocic; retards metabolic processes (both anabolic and catabolic) and thus lessens heat formation and spares the tissues of the body; acts peripherally on the uterine nerves; auricular depressant.

Toxic Action.—Cinchonism: sense of fulness in the head, tinnitus, vertigo, deafness, amblyopia, headache mydriasis; transient rashes, delirium, coma.

Quininæ Æthylcarbonas; Euquinina: $C_2H_5O.CO\ O.C_{20}H_{23}N_2O$ (sparingly soluble in water, soluble in alcohol and ether).

Dosage.—6 months, gr. ii-iii; 18 months, gr. iii-iv; 3 years, gr. iii-v; 5 years, gr. v. Adult, min., gr. v; max., xxx.

Method of Administration.—℞ Euquininæ, gr. v-x, pulveres, tabellæ, vel capsulæ no. 6.

Sig.—One, once or twice a day.

Uses.—Antimalarial; tasteless in substance, but bitter in solution.

Quininæ Bisulphas (soluble in 9 of water, and 23 of alcohol).

Dosage.—6 months, gr. i-ii; 18 months, gr. i-iii; 3 years, gr. ii-iii; 5 years, gr. iii-iv. Adult, min., gr. v; av., vii; max., xv.

Quininæ Carbonas; Aristoquin: $(C_{20}H_{23}N_2O).O.CO.O(C_{20}H_{23}N_2O)$. (tasteless because insoluble in water).

Dosage.—6 months, gr. i-ii; 18 months, gr. i-iii; 3 years, gr. ii-iii; 5 years, gr. iii-v. Adult, min., gr. v; av., vii max., xv.

Method of Administration.—℞ Aristochin, gr. vii, sacchari lactis, *q.s.*, pulveres 18.

Sig.—One powder, dry on the tongue, t.i.d. Gr. i-v for children, according to age.

Uses.—Antimalarial.

Quininæ Dihydrochloridum (soluble in 0.6 of water and 12 of alcohol).

Dosage.—6 months, gr. i-ii, 18 months, gr. i-iii; 3 years, gr. ii-iii; 5 years, gr. iii-v. Adult, gr. v-x-xl. Because of its solubility may be used hypodermically.

Quininæ Hydrobromidum (soluble in 40 of water and 0.9 of alcohol.

Dosage.—6 months, gr. i-ii; 18 months, gr. i-iii, 3 years, gr. ii-iii; 5 years, gr. iii-v. Adult, gr. v-x-xl.

Quininæ Hydrochloridum (soluble in 18 of water and 0.8 of alcohol).

Dosage.—6 months, gr. i-ii; 18 months, gr. i-iii; 3 years, gr. ii-iii; 5 years, gr. iii-v. Adult, gr. v-x-xl.

Quininæ Sulphas (soluble in 725 of water and 107 of alcohol, but soluble in water containing 1 drop of dilute sulphuric or hydrochloric acid to each grain of the sulphate of quinine).

Dosage.—6 months, gr. i-ii; 18 months, gr. i-iii; 3 years, gr. ii-iii; 5 years, gr. iii-v. Adult, gr. v-x-xl.

Method of Administration.—℞ Quininæ sulphatis, ℥i (gr. xv per dram); acidi sulphurici diluti, ℥i; tincturæ capsici, ℥i; spiritus frumenti, *q.s.* ad ℥ss.

Misce et fiat solutio.

Sig.—Fifteen to thirty drops, in a wineglassful of water, every four, six or eight hours.

Quininæ Tannas (very slightly soluble in water, more so in alcohol; almost tasteless).

Dosage.—6 months, gr. i-ii; 18 months, gr. i-iii; 3 years, gr. ii-iii; 5 years, gr. iii-v. Adult, gr. vxxl.

Method of Administration.—℞ Quininæ tannatis, gr. i-ii; sacchari albi, *q.s.*

M. Mitte talis pulveres no. 20.

Sig.—One powder, no oftener than four times in twenty-four hours, for infants.

Quininæ et Ureæ Hydrochloridum (soluble in 0.9 of water, and 2.4 of alcohol).

Dosage.—6 months, gr. i-ii; 18 months, gr. i-iii; 3 years, gr. ii-iii; 5 years, gr. iii-v. Adult, gr. v-x-xl.

Method of Administration.—Suitable for hypodermic injection, because of its solubility and slight irritability: one dose of fifteen grs. daily, in malaria.

For local anæsthesia, 0.25 to 1 per cent. by infiltration, 10 to 20 per cent. by surface application to mucous membranes. It should be boiled before using.

Uses.—Antimalarial, etc.; safe local anæsthetic.—Anæsthesia begins in about ten minutes and lasts several hours or longer (seven to ten days?). It is said to delay skin union, except, perhaps, in one quarter per cent. strength.

Radium; Radii Bromidum ($RaBr_2$), Chloridums ($RaCl_2$), Sulphas ($RaSO_4$), vel Carbonas ($RaCO_3$).

Radium salts may be obtained from the W. L. Cummings Chemical Co., Lansdowne, Pa.; the Radium Co. of America, Sellersville, Pa.; the Shlesinger Radium Co., Denver, Colo., and the Standard Chemical Co., Pittsburgh, Pa.

Apparatus for the production of radioactive drinking water may be obtained from Schieffelin and Co., New York, and from Radium Limited, New York. Radium compresses, radium earth, radium solution for bathing, and radium solution for drinking may be obtained from the Standard Chemical Co., Pittsburgh, Pa.

Method of Administration.—For surgical use, radium salts are enclosed preferably in glass containers "Radium may be administered as baths, by subcutaneous injection in the neighborhood of an involved joint (0.25 to 0.5 microgram in one or two cc. distilled water), by local application as compresses (from five to ten micrograms), by mouth as a drink cure (in increasing doses of from one to ten micrograms three or more times a day), by drinking radioactive water, containing only radium emanation (from two to twenty microcuries of emanation, or more in twenty-four hours), by inhalation of the emanation, the patient for two hours daily remaining in the emanatorium which contains 0.0025 to 0.25 (average 0.1 microcurie of emanation per litre of air." N. and N. O. R. (See Radium, in Part 1.)

Raspberry Syrup: Syrupus Rubi Idæi (raspberries) sugar and water, boiled and strained. Do not use tin vessels.

Uses.—Flavoring agent.

Regulin (Agag-agar containing 25 per cent. ext. cascaræ sagradæ).

Uses.—Laxative.

Resinæ Ceratum; Basilicon Ointment: Rosin 35, yellow wax 15, lard 50.

Uses.—Protective emollient.

Resina Jalapæ.

Dosage.—3 years, gr. ii; 5 years, gr. iii. Adult, min., gr. i; av., ii; max., v.

Method of Administration.—℞ Resinæ jalapæ, gr. ii-iii, pilulæ no. 6.

Sig.—Pill at bedtime.

Physiologic Action and Uses.—Hydragogue cathartic (local irritant); diuretic; acts on both large and small bowel.

Resina Podophylli.

Adult Dosage.—Min., gr. ⅟₂₀; av., ⅟₁₀; max., ½.

Method of Administration.—℞ Resinæ podophylli, gr. ½, pilulæ no. 12.

Sig.—One pill, once or twice daily, as a laxative two to six pills as a hydrogogue cathartic.

Uses.—Slow, irritant cathartic.

Resorcinol; Meta-dihydroxi-benzene: $^{1}C_6H_4(OH_2)$. 1:3 (soluble in 0.9 of water, and 0.9 of alcohol).

Adult Dosage.—Min., gr. i; av., ii; max., x.

Method of Administration.—Gr. v every two hours an an antipyretic; no more than gr. xlv in twenty-four hours.

External astrigent in 1 to 3 per cent. solutions; Keratolytic in 10 to 20 per cent. strength; ointment 5 to 10 per cent.

℞ Resorcinol, gr. xxxii. (gr. ii ad ℥i); aquam ad ℥ii.

M: Sig.—One dram, three to four times a day.

Uses.—Antiseptic; astringent; keratolytic; antifermentative; antipyretic.

Toxic Action.—Cardiac and respiratory depression, sweating, narcosis, collapse.

Rhamnus Purshiana. See Cascara Sagrada.

Rhatania. See Krameria.

Rhei et Sodæ Mistura (Soda bicarb. 3½, fl. ext. rhei 1½, fl. ext. ipecac ⅛, glyc. 35, spt. menth. pip. 3½, water to 100).

Adult Dosage.—Min., ℥ss; av., i; max., iv.

Method of Administration.—℞ Misturæ rhei et sodæ, ℥ii.

Sig.—Teaspoonful one to thrice daily, p. c.

Uses.—Antacid; laxative.

Rhei et Sodæ Mistura (Kerley).

Dosage.—6 months, ℥ss; 18 months, ℥ii; 3 years, ℥iii; 5 years, ℥iv. Adult, av., ℥iv.

Method of Administration.—℞ Pulveris rhei, gr. xlviii; sodii bicarbonitis, gr. xlviii; syrupi rhei aromatici, ℥i; aquæ, *q.s.* ad ℥ ii.

M. Sig.—A dose once to thrice daily.—Kerley.

Uses.—Antacid; laxative.

Rhei Extractum (lgm. represents 2 gm. rhubarb

Adult Dosage.—Min., gr. i; av., iv; max., x.

Physiologic Action and Uses.—Cathartic; bitter stomachic tonic; somewhat astringent in its after-effects; acts chiefly on the lower bowel.

Rhei Fluidextractum.

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

℞ Fluidextracti rhei, ℥i.

Sig.—15 to 30 drops in water at bedtime.

Rhei Pilulæ Compositæ (rhubarb gr. ii, aloes gr. iss, myrrh gr. i, oil of peppermint gr. ⅟₁₀.)

Adult Dosage.—Min., 1; av., 2; max., 5. Pills at bedtime.

Rhei Pulvis.

Adult Dosage.—As a stomachic. Min., gr., i; max., v. As a laxative. Min., gr. x., av., xv; max., xxx.

Rhei Pulvis Compositus.—See Pulvis Rhei Compositus.

Rhei Syrupus Aromaticus (arom.tr.rhei 15, syrup 85).

Dosage.—6 months, ℥i; 18 months, ℥ii; 3 years, ℥iii; 5 years, ℥iv. Adult, min., ℥ii; av., iiss; max., iv

Method of Administration.—℞ Syrupi rhei aromatici, ℥ii.

Sig.—One to four teaspoonfuls, one to thrice daily.

Uses.—Pleasant laxative; stomachic.

Rhei Tinctura Aromatica (rhubarb 20, cinnamon 4, cloves 4, nutmeg 2, glyc. 10, alcohol and water to 100)

Adult Dosage.—Min., ♏x; av., xxx; max., ℥i.

Method of Administration.—℞ Tincturæ rhei aromaticæ, ℥i.

Sig.—Thirty drops in water, once to thrice daily.

Rhois Aromaticæ Fluidextractum (Sweet Sumach).

Dosage.—18 months, ♏v; 3 years, ♏x; 5 years, ♏x. Adult, min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti rhois aromaticæ, ℥i.

Sig.—Fifteen drops in sweetened water, three to four times daily (for children over six years of age).

Physiologic Action and Uses.—Urinary astringent; recommended for enuresis.

Rhois Toxicodendri Tinctura (Poison Ivy).

Adult Dosage.—Min., ♏⅟₁₀; max., ii.

Method of Administration.—℞ Tincturæ rhois toxicodendri, ℥ss (♏⅟₁₀ ad ♏i); aquæ, ℥ivss.

M. Sig.—One minim, in water, three to four times daily, gradually increased.

Physiologic Action and Uses.—Possibly

prophylactic and curative in ivy poisoning.

Toxic Action.—Nausea, vomiting, vertigo, stupefaction, colic, diarrhœa, hæmaturia, anuria, fever, delirium, general pains.

Ricini Oleum; Castor-Oil.—See Castor-Oil.

Ringer's Solution (Sodium chlor. 9 gms., calc. chl. 0.24 gms., pot. chl. 0.42 gm., sod. bicarb. 0.2 gm., water 1000 c.c.).

Rochelle Salt; Potassii et Sodii Tartras: KNa $C_4H_4O_6+4H_2O$ (soluble in 0.9 of water).

Dosage.—6 months, gr. xv; 18 months, gr. xxx; 3 years, ʒi-ii; 5 years, ʒiii-iv. Adult, min ., ʒi av., iiss; max., iv.

Method of Administration.—Dissolved in half a glass of water, one hour before breakfast. One-half to one teaspoonful may be given every one to two hours, until purgation occurs.

Physiologic Action and Uses.—Saline cathartic; causing purgation by osmosis and interference with the absorption of fluids from the bowel; acis in one to twenty hours.

Rosæ Aqua; Rose-Water.

Adult Dosage.—Min., ʒi; av., iv; max., ℥i.

Uses.—Perfumed vehicle.

Rosæ Geranii Oleum.

Uses.—Perfume.

Rosæ Oleum; Attar of Rose.

Uses.—Perfume.

Rosmarini, Spiritus.

Uses.—Cutaneous stimulant.

Rubi Idæi Syrupus; Raspberry Syrup (raspberries, sugar, and water, boiled and strained. Do not use tin vessels).

Dosage.—Ad libitum.

Uses.—Flavoring agent.

Rubrum Scarlatinum; Scarlet Red; Toluyl-Ago-Betanaphthol; $CH_3C_6H_4N$: $NC_6H_3.(CH_3)N$: $N.C_{10}H_5.OH$.

Method of Administration.—℞ Unguenti rubri scarlatini, 4 to 8 per cent., ℥i.

Sig.—For local application.

Physiologic Action and Uses.—Said to stimulate epithelial proliferation.

Toxic Action.—Giddiness, headache, vomiting, abdominal pains, albuminuria, cyanosis, increased pulse-rate.

Rusci Oleum Rectificatum. See Oleum Betulæ.

Rutæ Oleum; Oil of Rue.

Adult Dosage.—Min., ♏i; av., ii; max., v . .

Uses.—Emmenagogue; aphrodisiac.

Toxic Action.—Gastro-enteritis, prostration, convulsions, strangury, anuria, narcosis.

Sabinæ Oleum; Oil of Savin: $C_{10}H_{16}$.

Adult Dosage.—Min., ♏i; av., ii; max., iv.

Uses.—Emmaenagogue.

Toxic Action.—Gastro-enteritis, hæmaturia, dysuria, narcosis.

Saccharin; Benzosulphinidum: $C_6H_4SO_2.CONH$ (soluble in 290 of water and 31 of alcohol; but much more soluble in water mixed with an equal amount of sod. bicarb. It is about 500 times as sweet as sugar, weight for weight).

Adult Dosage.—Min., gr. ss; av., iii; max., v. Up to gr. xxx per diem, if required. Ordinarily gr. ss-i is used to sweeten eight fluid ounces of food.

℞ Benzosulphinidi; sodii bicarbonatis, aa gr. ss.

Misce. Mitte talis tabellæ no. 30.

Sig.—One tablet dissolved in each eight fluid ounces of food, as a sweetner.

Uses.—Substitute for sugar as a flavoring agent.

Saccharin Soluble; Sodii Benzosulphinidum; Sodium Saccharin (soluble in 1.2 of water and 50 of alcohol).

Adult Dosage.—Min., gr. ss; av., iii; max., v. Up to gr. xxx per diem, if required. Ordinarily gr. ss-i is used to sweeten eight fluid ounces of food.

℞ Sodii benzosulphinidi, gr. ss, tabellæ no. 100.

Sig.—One or two tablets dissolved in each eight fluid ounces of food, as a sweetner.

Uses.—Substitute for sugar as a sweetening agent.

Saccharum Album; Cane Sugar; Saccharose: $C_{12}H_{22}O_{11}$ (soluble in 0.5 of water and 170 of alcohol).

Uses.—Flavoring agent; diluent; food.

Saccharum Lactis; Milk Sugar; Lactose; $C_{12}H_{22}O_{11}+H_2O$ (soluble in 4.9 of water, but practically insoluble in alcohol).

Physiologic Action and Uses.—Flavoring agent; diluent; food; slightly laxative and diuretic.

Sajodin; Calcium Monoiodobehenate: $(C_{21}H_{42}ICOO)_2Ca$. (Insoluble in water).

Adult Dosage.—Min., gr. v; av., x; max., xv. Gr.xv-xlv daily in powder, tablet, or capsule, one-half hour p.c.

℞ Sajodin, gr. v-xv, pulveres, tabellæ, vel capsulæ, no. 30.

Sig.—One, t.i.d., one-half hour after meals.

Physiologic Action and Uses.—Sajodin contains 26 per cent. of iodin and 4.1 per cent. of calcium, and is indicated wherever iodine or iodide is indicated. It is said to be less liable to injure the stomach or produce rashes.

Salicinum: $C_{13}H_{18}O_7$ (glucoside; soluble in 28 of water and in 30 of alcohol).

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—℞ Salicini, gr. xv, capsulæ no. 30.

Sig.—One or two capsules every two to four hours.

Physiologic Action and Uses.—Antirheumatic; oxidized in the body into salicylic acid.

Toxic Action.—Nausea, vomiting, sweating, sense of fulness in the head, tinnitus, dizziness, headache, deafness, dimness of vision, dyspnœa, mydriasis, delirium, cardiac and respiratory depression, low blood tension, epistaxis and other hæmorrhages, erythematous and other rashes, irritation of the kidneys, central nervous depression, slowing and depression of the respiration, collapse (abortion) rarely convulsions.

Give sod. bicarb. in large doses.

Salicylas Methylis; Artificial Oil of Wintergreen Oleum Gaultheriæ.

Dosage.—6 months, gt. i; 18 months, gtt. ii-iii; 3 years, gtt. iii; 5 years, gtt. iii-v. Adult, min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Olei gaultheriæ, ʒi

Sig.—Twelve to twenty drops, well diluted in sweetened water or milk, every two to four hours. It may be prescribed in formalin-hardened capsules.

For external application and absorption; either pure or diluted with lanolin (10 per cent. ung.) or an. oil.

Physiologic Action and Uses.—Antirheumatic; antipyretic; local anodyne; flavor; very irritating to the stomach; readily absorbed through the skin.

Toxic Action.—See under Salicinum.

Salicylas Phenylis; Salol: $C_6H_4(OH)COOC_6H_5$ 1:2 (soluble in 6670 of water).

Dosage.—6 months, gr. ss; 18 months, gr. i-ii; 3 years, gr. ii; 5 years, gr. iii. Adult, min., gr. v; av., viiss; max., xv.

Method of Administration.—℞ Phenylis salicylatis, gr. v, capsulæ, tabellæ, vel pulveres no. 12.

Sig.—One every two to four hours.

Physiologic Action and Uses.—Intestinal and urinary antiseptic by the liberation of phenol and salicylic acid; antirheumatic; antipyretic; diaphoretic.

Toxic Action.—Symptoms of salicylic acid poisoning, together with lumbar heaviness, smoky urine, and other phenol effects.

Salicylas Sodii: $C_6H_4(OH)(COONa)$ (soluble in 0.9 of water and 9.2 of alcohol).

Dosage.—6 months, gr. i; 18 months gr. i-ii; 3

years, gr. ii–iii; 5 years, gr. iii–v. Under 3 years, 12 to 15 grains daily; 5 years, 20 grains daily; 8 to 10 years, 30 grains daily; 10 years, 40 grains daily. —Kerley. Adult, min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Sodii salicylatis, ℥ss (gr. xv per dose); sodii bicarbonatis, ℥ss–i (gr. xv–xxx per dose); aquæ, *q.s.* ad ℥xii.

M. Sig.—Six drams, in half a tumbler of water, every one, two, three to four hours, until pain is relieved, then every four to five hours until the temperature begins to fall. Should toxic symptoms appear, stop the drug, and resume later in smaller doses. The alkali is added to prevent salicylic acidosis.

Physiologic Action and Uses.—Antirheumatic; analgesic; antipyretic; diaphoretic; cholagogue; biliary antiseptic; increases nitrogenous metabolism and the excretion of uric acid. The salicylates are contra-indicated in meningeal inflammation or congestion, otitis media, renal insufficiency.

Toxic Action.—See under Salicinum.

Salicylici Acidi Collodium (10-20 per cent.).

Uses.—Keratolytic for corns and callouses.

Salicylici Acidi Unguentum.

℞ Acidi salicylici, gr. v–x–xxx–xlviii; petrolati et adipis lanæ hydrosi, aa ℥ss. M. et fiat ung.

Uses.—Antiseptic; parasiticide; keratolytic.

Salicylicum Acidum: $C_6H_4(OH)COOH$ (soluble in 460 of water, but readily soluble in 10 per cent. sod. phosphate solution; soluble in 2.7 of alcohol).

Adult Dosage.—Min., gr. v; av., x; max., xx.

Method of Administration.—℞ Acidi salicylici, ℥iss; sodii phosphatis, ℥iii; aquæ, *q.s.* ad ℥iv.

M. Sig.—One tablespoonful, well diluted, every four hours. For gastric lavage, gr. xv ad Oi.

As a dusting powder: 2 to 5 per cent., with boric acid, talcum, starch, or zinc oxide.

Physiologic Action and Uses.—Antirheumatic and antipyretic; local antiseptic, parasiticide, and keratolytic.

Toxic Action.—Nausea, vomiting, tinnitus, sense of fulness in the head, disturbances of sight and hearing, sweating, mydriasis, delirium, dyspnœa, slow pulse, nephritis.

Saliformin; Hexamethylenaminæ Salicylas: $(CH_2)_6N_4C_6H_4.OH.COOH$ (readily soluble in water or alcohol).

Adult Dosage.—Min., gr. v; max., xxx.

Method of Administration.—℞ Hexamethyenaminæ salicylatis, gr. lxxx (gr. v ad ℥i); elixiris simplicis, ℥ii.

M. Sig.—One or two teaspoonfuls every four hours. It may be prescribed in tablet form.

Uses.—Urinary antiseptic.

Saline Cathartics: Rochelle Salt, Glauber's Salt, Sodium Phosphate, Seidlitz Powder, Magnesii Sulphas, Magnesii Citratis, Liquor, Magnesii Carbonas, Magnesii Oxidum, Potassii Bitartras, Potassii Citras.

Saline Solution, Normal or Physiologic: a 0.85 per cent. solution of sodium chloride in water, or about one dram to the pint.

Physiologic Action and Uses.—Isotonic with the red blood-cells.

Salipyrin; Antipyrinæ Salicylas: $C_{11}H_{12}N_2O.C_6H_4OH.COOH$ (soluble in 200 of water; readily soluble in alcohol).

Adult Dosage.—Min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Antipyrinæ salicylatis, gr. v–x, capsulæ, tabellæ, vel pulveres no. 24.

Sig.—One, three to four times daily; or every one to two hours until ℥ii have been taken (Potter).

Uses.—Analgesic; antirheumatic; antipyretic.

Salol; Phenylis Salicylas: $C_6H_4(OH)COOC_6H_5$ 1 : 2 (soluble in 6670 of water).

Dosage.—6 months, gr. ss; 18 months, gr. i–ii; 3 years, gr. ii; 5 years, gr. iii. Adult, min., gr. v; av., viiss; max., xv.

Method of Administration.—℞ Phenylis salicylatis, gr. v, capsulæ, tabellæ, vel pulveres no. 12.

Sig.—One, every two to four hours.

Physiologic Action and Uses.—Intestinal and urinary antiseptic, by the liberation of phenol and salicylic acid; antirheumatic; antipyretic; diaphoretic.

Toxic Action.—Symptoms of salicylic acid poisoning, together with lumbar heaviness, smoky urine, and other phenol effects.

Salophen; Acetylparaminophenyl Salicylate: $C_6H_4.OH.CO.O.(C_6H_4.NH(CH_3CO)$. (almost insoluble in water; freely soluble in alcohol).

Adult Dosage.—Min., gr. v; av., x; max., xv.

Method of Administration.—℞ Salophen, gr. v–x, pulveres, tabellæ, vel capsulæ no. 24.

Sig.—One, three to four times daily, if necessary, up to ℥i–iss in twenty-four hours (Potter).

Physiologic Action and Uses.—Antirheumatic; antipyretic; analgesic; antiseptic; urinary and intestinal antiseptic.

Salvarsan; Arsenobenzol; Arsphenamina; "606"; 3-diamino-4-dihydroxyl-1-arsenobenzene hydrochlorid: $HCl.NH_2.OH.C_6H_3.As:As.C_6H_3OH.NH_2 HCl+2H_2O$.

Dosage.—18 months, .02 gm.; 3 years, 0.1 gm.; 5 years, 0.1–0.2 gm. Adult, min., 0.3; max., 0.6 gm.

Method of Administration.—See Part 1, Syphilis.

Physiologic Action and Uses.—Antiluetic; alterative; useful in all spirillum affections.

Toxic Action.—Headache, perhaps feeble and rapid action of the heart, cutaneous eruption, renal irritation, gastro-enteritis, hemorrhage.

Salviæ Fluidextractum; Sage, fl. ext.

Adult Dosage.—Min., ♏xv; max., xl.

Method of Administration. — ℞ Fluidextracti salviæ, ℥i.

Sig.—Fifteen to sixty drops, in water, t.i.d.

Uses.—Anhidrotic.

Salviæ Infusum; Sage Infusion.

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Infusi salviæ.

Sig.—Two tablespoonfuls to a wineglassful, t.i.d.

Uses.—Anhidrotic.

Sambucus; Elder Flowers.

Adult Dosage.—Min., ℥ss; max., i.

Method of Administration.—In hot infusion, as a tea.

Uses.—Diaphoretic.

Sanguinariæ, Pulvis.

Adult Dosage.—Min., gr. i; av., ii; max., v.

℞ Pulveris sanguinariæ, gr. ii; pilulæ No. 12.

Sig.—One pill every two hours.

Uses.—Nauseant expectorant.

Sanitas Oil or Disinfecting Fluid (an aqueous solution of turpentine which has been oxidized by exposure to the air, containing hydrogen dioxide, thymol, camphor, and camphoric acid).

Uses.—Antiseptic.

Sanose (80 per cent. casein, 20 per cent. albumose).

Uses.—Concentrated albuminous food.

Santali Oleum; Oil of Sandalwood.

Adult Dosage.—Min., ♏v; av., x; max., xx.

Method of Administration.—℞ Olei santali, ♏x, capsulæ no. 12.

Sig.—One, t.i.d.p.c.

It may be prescribed in emulsion, but better in capsule.

Physiologic Action and Uses.—Urinary astringent and antiseptic; useful in sub-acute gonorrhœa and

ammoniacal cystitis due to pyogenic cocci; broncho-pulmonary antiseptic and deodorizer.

Toxic Action.—Gastric and intestinal irritation; lumbar pain.

Santoninum (soluble in 5300 of water, and 43 of alcohol).

Dosage.—6 months, gr. ⅛; 18 months, gr. ⅓; 3 years, gr. ½; 5 years, gr. ½. Adult, min,. gr. ss; av., i; max., iii.

Method of Administration.—℞ Santonini, gr. ⅓; sacchari lactis, *q.s.*

Misce. Mitte talis pulveres no. 9.

Sig.—One powder, every four hours, for three doses, soon followed by calomel, or castor oil; a purge should have been given the evening before. Repeat for two or three successive days. See Ascariasis, Part 1, for important information.

Physiologic Action and Uses.—Anthelmintic, especially toward the round-worm, in less degree toward the thread-worm. Contra-indications: fever, constipation.

Toxic Action.—Xanthopsia or yellow vision, vertigo, mental confusion, tremors, grinding of the teeth, weakness, slow pulse, feeble respiration, nausea, vomiting, purging, stupor, mydriasis, sweating, convulsions, paralysis, temporary blindness lasting a week or longer.

Sapo; Soap; White Castile Soap (prepared from olive-oil and sodium hydrate).

Uses.—Detergent.

Sapo Mollis; Soft or Green Soap (prepared from cottonseed oil and pot. hydrate).

Uses.—Detergent.

Saponis Emplastrum (soap 10, lead plaster 90, water *q.s.*).

Saponis Linimentum (white castile soap 6, camphor 4½, oil of rosemary 1, alcohol 72½, water to 100).

Uses.—Mild rubefacient, detergent, and vehicle.

Saponis Mollis Linimentum; Tincture of Green Soap (soft soap 65, oil of lavender 2, alcohol to 100).

Uses.—Detergent.

Sarsaparillæ Syrupus Compositus (fl. ext. sarsap. 20, fl. ext. glycyrrhiza 1½, fl. ext. senna 1½, sugar 65, oils of sassafras, anise, and gaultheria, each 0.02, water to 100).

Adult Dosage.—Min., ʒi; av., iv; max., ʒi.

Uses.—Vehicle.

Sassafras Medullæ Mucilago.

Adult Dosage.—Av., ʒiv.

Uses.—Demulcent; flavor; for the suspension of insoluble powders.

Sassafras Oleum.

Adult Dosage.—Min., ♏i; av., iii; max., iv.

Uses.—Flavor; rubefacient.

Saw Palmetto Fluid-extract; Fluidextractum Sabali.

Adult Dosage.—Min., ♏xv; max., lx.

Method of Administration.—℞ Fluidextracti sabali, ʒi.

Sig.—Fifteen to sixty drops, in water, three to four times a day.

Uses.—Diuretic.

Saxin (600 times sweeter than sugar).

Uses.—Substitute for sugar, as a flavor.

Scammoniæ Pulvis.

Adult Dosage.—Min., gr. i; av., iv; max., x.

Uses.—Cathartic.

Scarlet Red—See Rubrum Scarlatinum.

Schlesinger's Analgesic Solution:

℞ Scopolaminæ hydrobromidi 0.0025 or gr. 1/24 (gr. 1/410 ad ♏v); dioninæ, 0.4 or gr. vi (gr. ⅛ ad ♏v); morphinæ hydrobromidi, 0.2 or gr. iii (gr. 1/10 ad ♏v); aquæ destillatæ, *q.s.* ad 10.0 or ʒiiss.

M. Sig.—♏v–vii, hypodermically.

Physiologic Action and Uses.—A greatly superior substitute for morphine for the relief of pain and suffering.

Scillæ Acetum (10 per cent. in dilute acetic acid; biologically assayed).

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Aceti scillæ (biologically assayed), ʒss.

Sig.—Fifteen drops in water, 3 to 4 times daily.

Physiologic Action and Uses.—Expectorant; diuretic; slows and strengthens the heart and raises the arterial pressure.

Toxic Action.—Vomiting, purging, strangury, hæmaturia, convulsions, paralysis.

Scillæ Pulvis (biologically assayed).

Adult Dosage.—Min., gr. i; av., iss; max., v.

Scillæ Syrupus (biologically assayed).

Adult Dosage.—Min., ♏x; av., xxx; max., ʒi.

Method of Administration.—℞ Syrupi scillæ (biologically assayed), ʒi.

Sig.—Thirty drops, 3 to 4 times a day.

Scillæ Tinctura (biologically assayed).

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Scoparii Infusum (broom tops, ʒss, in water Oiss, boiled down to a pint).

Adult Dosage.—Av., ʒii.

Method of Administration.—℞ Scoparii, ʒiv; aquæ, Oiss. Boil down to a pint and filter.

Sig.—Two ounces, or a wineglassful, frequently, until a pint is taken in twenty-four hours.

Uses.—Diuretic; laxative.

Scopolaminæ (Hyoscinæ) Hydrobromidum: $C_{17}H_{21}NO_4HBr+3H_2O$. (alkaloid; the tropaic acid ester of scopoline; soluble in 1.5 of water, and 20 of alcohol).

Adult Dosage.—Min., gr. 1/200; av., 1/50; max., 1/30.

Method of Administration.—℞ Hyoscinæ hydrobromidi, gr. 1/200–1/30, tabellæ no. 6.

Sig.—A tablet, by mouth or hypodermically, several times daily. As a mydriatic, in place of atropine, when the latter causes conjunctivitis: ¼ to ½ per cent., or about 2 grains to the ounce.

Uses.—Cerebral sedative; mydriatic.

Toxic Action.—Respiratory depression, fall of blood-pressure, collapse.

Seidlitz Powder; Pulvis Effervescens Compositus. Blue paper: Rochelle salt 120 grs., sod. bicarb. 40 grs. White paper: Tartaric acid 35 grs.

Adult Dosage.—Av., 1 to 2 pairs.

Method of Administration.—Dissolve the contents of each paper separately in water, and pour the two solutions together.

Uses.—Saline aperient.

Senecionis Fluidextractum N. F.

Adult Dosage.—Min., ʒss; max., i.

Method of Administration.—℞ Fluidextracti senecionis, ʒi.

Sig.—ʒss–i, in water, t.i.d.

Uses.—Hæmostatic.

Senegæ Fluidextractum.

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti senegæ, ʒiii ℈i (♏xiiss per dram); syrupi simplicis, ʒi; aquæ, *q.s.* ad, ʒii.

M. Sig.—One dram, every 2 to 3 hours.

Physiologic Action and Uses.—Stimulating or nauseant expectorant (due to saponin); diuretic; diaphoretic.

Toxic Action.—Cardiovascular depression, weakness.

Senegæ Infusum (B. P.).

Adult Dosage.—Min., ʒss; max., i.

Senna.

Adult Dosage.—Min., ʒss; av., i; max., ii.

Physiologic Action and Uses.—Cathartic; acts in five to eight hours, chiefly on the lower bowel.

Sennæ Confectio (Senna 10, cassia fistula 16, tamarind 10, prune 7, fig 12, sugar 55½, oil of coriander ½, water to 100).

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Confectionis sennæ, ʒii.

Sig.—One teaspoonful at bedtime.

Uses.—A pleasant laxative.

Sennæ Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., ʒi.

Method of Administration.—℞ Fluidextracti sennæ, ʒiv; syrupi glycyrrhizæ, *q.s.* ad ʒii.

M. Sig.—Two teaspoonfuls at bedtime.

Sennæ Syrupus (Fl. ext. sennæ 25, oil of coriander ½, syrup to 100).

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Syrupi sennæ, ʒii.

Sig.—One teaspoonful at bedtime.

Serobacterins. See Vaccina.

Serum Antianthracum (an antibacterial serum).

Adult Dosage.—Min., 30 c.c.; max., 100 c.c.

Method of Administration.—An initial dose of 80 to 100 c.c., divided in three or four portions, may be injected under the skin at different points, or administered intravenously, and repeated in twenty-four hours if no improvement is noted. Daily injections may have to be administered. It is said to be harmless but for the ether it contains (see Anaphylactic Shock, Part 1). In severe cases 100 c.c. may be injected several times a day.

Toxic Action.—Serum disease is manifested by an urticarial or exanthematous rash, œdematous swelling of the mucous membranes, swelling of the lymph glands, perhaps vomiting, dyspnœa, rapid pulse, cyanosis, joint pains and swelling, general malaise, subnormal temperature or fever, perhaps convulsions, collapse, and prolonged prostration, very rarely death. These symptoms may appear within a few days to one or two weeks after the injection of the serum.

Serum Antibotulinum.

Serum Anticholerum.

Serum Anticolonicum.

Serum Antidiphthericum; Diphtheria Antitoxin (Not less than 250 antitoxic units per c.c.). Keep sealed in a cool, dark place.

Dosage.—6 months, 1500 units; 18 months, 2000 units; 3 years, 4000 units; 5 years, 5000 units. Adult, min., 5000 units; av., 15,000 units; max., 40,000 units.

Method of Administration.—Immunizing dose, 500 units for infants, 1500 to 2000 units for children over two years; Kerley says, at least 1000 units, regardless of the age of the child. Immunity lasts about three weeks. Adults need not be immunized, and children only where there is overcrowding, as in institutions. See Diphtheria, Part 1.

Serum Antidiphthericum Purificatum (Diphtheria antitoxin globulins; Refined and Concentrated Diphtheria Antitoxin in Physiologic Sodium Chloride Solution). Lessens the danger of serum disease. The dosage is the same as that of Serum Antidiphthericum.

Serum Antidiphthericum Siccum; Dried Diphtheria Antitoxin (Evaporated Serum). The dosage is the same as that of Serum Antidiphthericum.

Serum Antidysentericum (antitoxic and antibacterial against the Shiga, Flexner, and Y strains of the dysentery bacillus).

Adult Dosage.—Min., 20 c.c.; max., 100 c.c., subcutaneously, to be followed at eight-hour intervals by doses of 50 c.c. until 400 c.c. are given.

Serum Anti-Glanders.

Serum Antigonococcum (antibacterial).

Adult Dosage.—Min., 2 c.c.; av., 4 c.c.; max., 6 c.c., injected deeply, but not necessarily into the muscle, every day, or every second or third day, gradually increased to 6 to 8 c.c. every fifth day.

Serum Antileprum.

Serum Antimeningococcum (antibacterial).

Dosage.—3 to 5 years, 5 c.c. Adult, 30 c.c. "Maximum safe doses" (*Useful Drugs, A. M. A.*). Introduce the serum, intraspinally, slowly by gravity, after the removal of an equal amount of cerebrospinal fluid, the administration being controlled by blood-pressure readings, a drop of 10 mm. of mercury during administration being the signal for withdrawal of the needle. Repeat the dose, as indicated, and continue the treatment as long as active symptoms remain (see Cerebrospinal Fever, Part 1).

Serum Anti-Plague.

Adult Dosage.—Min., 20 c.c.; max., 320 c.c., Hypodermically or intravenously, every day.

Serum Antipneumococcum (antibacterial).

Adult Dosage.—Min., 50 c.c.; max., 100 c.c.

Method of Administration.—Hypodermically or intravenously every eight hours. There are four types of pneumococci, and the serum used should be obtained from the type of organism present in the case under treatment (see Pneumonia in Part 1). Type 1 immune serum is the valuable one.

Serum Antirabicum.

Adult Dosage.—10 c.c., five c.c., and 5 c.c., on three successive days.

Serum Antistaphylococcum (antibacterial).

Adult Dosage.—Min., 20 c.c.; max., 100 c.c., repeated as indicated by the symptoms.

Serum Antistreptococcum (antibacterial).

Adult Dosage.—Min., 20 c.c.; max., 100 c.c., hypodermically, every four to six hours, according to the severity of the case and the age of the patient.

Serum Antitetanicum; Tetanus Antitoxin.

Adult Dosage.—Min., 3000 units; max., 10,000 units. Immunizing dose, 1500 units, to be given hypodermically on the day of the wound, and repeated weekly until healed.

Curative dose, 3000 to 5000 units, intraspinally, diluted with an equal volume of physiologic saline solution, and 10,000 units intravenously as soon as possible, the intraspinal dose to be repeated daily until the patient is cured, and 10,000 units to be given hypodermically on the fourth day.

Serum Antitetanicum Purificatum (Antitetanic Globulins; Refined and Concentrated Tetanus Antitoxin in Physiological Sodium Chloride solution).

Method of Administration.—The dosage is the same as that of Serum Antitetanicum.

Serum Antitetanicum Siccum; Dried Tetanus Antitoxin (Evaporated Serum).

Method of Administration.—The dosage is the same as that of serum antitetanicum. It may be dusted into a suspicious wound.

Serum Antityphosum.

Adult Dosage.—10 to 12 c.c., hypodermically, to vigorous adults; 6 to 8 c.c. if treatment is commenced on the fifth day of the disease; 4 to 10 c.c. after a week, if the fever is high.—Chantemesse.

Serum, Normal Horse.

Method of Administration.—According to Weil, the dose intravenously is 10 to 20 c.c. for adults, half this amount for children; subcutaneously, 20 to 30 c.c. for adults and half this for children. According to Moss, "as much as 100 or even 200 c.c. in four or five days" may be given. Ortner mentions doses of 2 to 4 ounces.

Physiologic Action and Uses.—Hæmostatic; increases the coagulability of the blood.

Sesami Oleum; Teel Oil; Benne Oil.

Uses.—Emollient; substitute for olive oil.

Sevum Præparatum; Prepared Mutton Suet.

Uses.—Ointment basis; do not use if rancid.

Sherry Wine; Vinum Xericum (20 to 35 per cent. alcohol).

Dosage.—18 months, gtt. xxx; 3 years, gtt. xlv–℥i; 5 years, ℥i–ii. Adult, min., ℥i; max., ii.

Method of Administration.—Every one to four hours; no more than 1 to 2 oz. in twenty-four hours to a child of one year or less, 6 to 8 oz. to a child of five years, 20 oz. to an adult.

Uses.—Alcoholic stimulant and sedative.

Silver. See Argentum.

Sinapis; Sinapis Nigra; Mustard.—See Mustard.

Sinapis Emplastrum; Mustard Plaster.

Uses.—Counter-irritant.

Sinapis Oleum Volatile; Mustard Oil; Allyl Sulpho-Cyanide: C_4H_5NS.

Adult Dosage.—Min., ♏⅛; max., ¼.

Uses.—Vesicant.

Smelling Salts (ammonium carbonate with ethereal salts, such as the oil of lavender).

Uses.—Stimulant.

Sodæ Chlorinatæ Liquor; Labarraque's Solution.

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—In 15 to 20 parts water, as a spray, gargle, or wash. As a vaginal douche, one teaspoonful to the pint.

Uses.—Antiseptic; disinfectant.

Soda-Mint; Mistura vel Liquor Sodæ et Menthæ, N. F. (sod. bicarb. 5, arom. spt. ammon, 1, spearmint water to 100).

Adult Dosage.—Av., ℥ii.

Method of Administration.—℞ Misturæ sodæ et menthæ, ℥iv.

Sig.—Two teaspoonfuls, as required.

Uses.—Antacid and carminative.

Sodii Agaracinas.

Adult Dosage.—Min., gr. ii; max., iv.

Method of Administration.—℞ Sodii agaracinatis, gr. ii, capsulæ no. 6.

Sig.—One or two capsules, at bedtime.

Uses.—Anhidrotic.

Sodii Arsenas: $Na_2HAs\,O_4+7H_2O$ (soluble in 1.5 of water; slightly soluble in alcohol).

Adult Dosage.—Min., gr. 1/16; av., ½; max., ⅛.

Method of Administration.—℞ Sodii arsenatis, gr. vii (gr. 1/11 per dose of 3 minims); aquæ, ℥iv.

M. Sig.—Three minims in water, t.i.d.p.c. It may be given in pill form.

Uses.—Alterative; tonic; stomachic; inhibits oxidation and stimulates anabolism; stimulates the hæmatopoietic organs.

Sodii Arsenas Exsiccatus: Na_2HAsO_4 (soluble in 3.1 of water).

Adult Dosage.—Min., gr. 1/30; av., 1/20; max., 1/15.

Method of Administration.—℞ Sodii arsenatis exsiccati, gr. iv (gr. 1/30 per dose of 3 minims); aquæ, ℥iv.

M. Sig.—Three minims in water, t.i.d.p.c.

Sodii Arsenilas; Atoxyl.—See Atoxyl.

Sodii et Auri Chloridum: $AuCl_3NaCl+2H_2O$ (very soluble in water).

Adult Dosage.—Min., gr. 1/60; av., 1/10; max.,. ⅛.

Method of Administration.—℞ Auri et sodii chloridi, gr. ss; aquæ destillatæ, ℥ii.

M. Sig.—℥i in water, t.i.d. It may also be prescribed in pill form.

Uses.—Alterative.

Sodii Benzoas: $Na(C_6H_5COO)$ (soluble in 1.8 of water).

Dosage.—6 months, gr. i; 18 months, gr. i–ii; 3 years, gr. ii; 5 years, gr. iii–v. Adult, min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Sodii benzoatis, ℥iv (gr. viiss per dram); aquæ, ℥iv.

M. Sig.—Two drams in half a tumbler or more of water, every two to four hours.

Uses.—Urinary acidifier and antiseptic; diuretic; intestinal antiseptic.

Sodii Benzosulphinidum; Sodium-Saccharin; Soluble Saccharin (soluble in 1.2 of water, and in 50 of alcohol).

Adult Dosage.—Min., gr. ss; av., iii; max., v; up to gr. xxx per diem, if required. Ordinarily, gr. ss–i is used to sweeten eight fluid ounces of food.

℞ Sodii benzosulphinidi, gr. ss, tabellæ no. 100.

Sig.—One or two tablets dissolved in each 8 fluid-ounces of food, as a sweetener.

Uses.—Substitute for sugar as a sweetening agent.

Sodii Bicarbonatis; Baking Soda: $NaHCO_3$ (soluble in 10 of water; insoluble in alcohol; converted by boiling into the normal carbonate).

Dosage.—6 months, gr. i–ii; 18 months, gr. ii; 3 years, gr. iii; 5 years, gr. v. Adult, min., gr. v; av., xv; max., xxx; up to two ounces daily, in acidosis.

For intravenous injection: 6 per cent. solution, sterilized by boiling and thus partly converted into the normal carbonate, which is caustic,—1000 c.c. injected with great care that none of the liquid gets outside the veins lest necrosis occur.

For subcutaneous or intramuscular injection: 3 per cent. solution, boiled, cooled, and treated with carbon dioxide until colorless to phenolphthalein.

For rectal administration: 4 per cent. solution by the drop method. See Acidosis, Part 1.

Uses.—Antacid; analgesic; antipruritic; non-caustic.

Sodii Biphosphas; Sodium Acid Phosphate: $NaH_2PO_4+H_2O$ (very soluble in water).

Adult Dosage.—Min., gr. xv; av., xx; max., ℥i.

Method of Administration.—℞ Sodii biphosphatis, ℥iv (gr. xx per dose); syrupi simplicis, ℥iii; aquæ destillatæ, q.s. ad ℥vi.

M. Sig—Tablespoonful in water, every two to three hours, for from 5 to 10 doses, or until the urine is rendered acid.

Physiologic Action and Uses.—Urinary acidifier. Do not administer hexamethylenamine until after the acid phosphate has left the stomach.

Sodii Boras; Borax.—See Borax.

Sodii Bromidum.—See Bromidum Sodii.

Sodii Cacodylas.—See Cacodylas Sodii.

Sodii et Calcii Glycerophosphati Elixir.

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Elixiris calcii et sodii glycerophosphati, ℥iv.

Sig.—Two teaspoonfuls, t.i.d.

Uses.—Alterative; tonic.

Sodii Carbonas Monohydratus: $Na_2CO_3+H_2O$ (soluble in 3 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. i; av., iv; max., vii.

Alkaline Bath: 2 to 6 ounces to 30 gallons of water.

Uses.—Antacid; detergent.

Sodii Chloras: $NaClO_3$ (soluble in 1.1 of water and about 100 of alcohol).

Adult Dosage.—Min., gr. i; av., iv; max., x.

Method of Administration.—See Potassii Chloras.

Sodii Chloridum; Common Salt: NaCl (soluble in 2.8 of water; nearly insoluble in alcohol).

Adult Dosage.—Min., gr. x; av., ℥i; max., iv.

Method of Administration.—As a laxative: ℥i in aquam ℥ss–i, one hour before breakfast.

As an emetic: ℥iv in concentrated solution, or about 1½ oz. of water.

Physiologic Salt Solution: 0.85 per cent., or 8.5 gm. to 1000 c.c. water, or about one dram to the pint.

Uses.—Laxative; emetic; used to prepare isotonic or physiologic salt solution.

Sodii Glycerophosphas.—See Glycerophosphas Sodii.

Sodii Glycocholas.—See Glycocholas Sodii.

Sodii Gynocardas.

Adult Dosage.—Min., gr. ss; av., iii; max., xlv.

Method of Administration.—℞ Sodii gynocardatis, gr. ss, capsulæ no. 12.

Sig.—One capsule, t.i.d.p.c. Gradually increase the dose to gr. iii–xlv, t.i.d., or gr. iii–v, in capsule, ten to twenty times daily.

Uses.—Anti-leprosy.

Sodii Hydroxidi Liquor (soda 56, distilled water to 100).

Adult Dosage.—Min., ♏v; av., xv; max., xxx; well diluted in water.

Uses.—Antacid.

Sodii Hydroxidum; Caustic Soda: NaOH (soluble in 0.9 of water, very soluble in alcohol).

Uses.—Alkaline; caustic.

Sodii Hypophosphis: $NaH_2PO_2+H_2O$ (soluble in 1 of water; soluble in alcohol).

Adult Dosage.—Min., gr. v; av., xv; max., xxx.

Method of Administration.—℞ Sodii hypophosphitis, ʒii ∋ ii (gr. x per dose); syrupi simplicis, ʒii; aquæ, q.s. ad ʒiv.

M. Sig.—Dessertspoonful t.i.d.

Uses.—Alterative.

Sodii Hyposulphis; Sodii Thiosulphas: $Na_2S_2O_3+5H_2O$ (soluble in 0.5 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. v; av., xv; max., xx.

Method of Administration.—℞ Sodii hyposulphitis, ʒv ∋i (gr. xx per dram); aquæ, q.s. ad, ʒii.

M. Sig.—One dram three to four times a day.

External antiseptic and parasiticide: 10 per cent. lotion or ointment.

Physiologic Action and Uses.—Partly decomposed by the acid of the stomach into sulphurous acid, with the eventual formation of sulphate, which acts as a purgative; gastric and external antiseptic and parasiticide.

Sodii Iodidum.—See Iodidum Sodii.

Sodii Nitris.—See Nitris Sodii.

Sodii Phosphas: $Na_2HPO_4+12\ H_2O$ (soluble in 2.7 of water; insoluble in alcohol).

Dosage.—6 months, gr. v–x; 18 months, gr. x–xv; 3 years, gr. xv–xx; 5 years, gr. xx–xxx. Adult, min., ʒss; av., i; max., iv.

Method of Administration.—℞ Sodii phosphatis, ʒii.

Sig.—Teaspoonful, dissolved in hot water, t.i.d., one hour a.c.

Physiologic Action and Uses.—Saline cathartic: causing purgation by osmosis and interfering with the absorption of fluids from the bowel; acts in one to twenty hours.

Sodii Phosphas Effervescens (exsiccated sod. phos. 20, sod. bicarb. 47¾, tartaric acid 25¼, citric acid 16¼).

Adult Dosage.—Min., ʒi; av., iiss; max., iii.

Method of Administration.—℞ Sodii phosphatis effervescentis, ʒiv.

Sig.—Two or three teaspoonfuls in water, t.i.d., one hour a.c.

Sodii Phosphas Exsiccatus: Na_2HPO_4 (soluble in 8.1 of water; insoluble in alcohol).

Adult Dosage.—Gr. xv-xxx.

℞ Sodii phosphatis exsiccati, ʒii.

Sig.—Half a teaspoonful, in hot water, t.i.d., one hour a.c.

Sodii Pyrophosphas: $Na_4P_2O_7+10\ H_2O$ (soluble in 12 of water; insoluble in alcohol).

Adult Dosage.—Min., gr. x; av., xxx; max., xlv.

Method of Administration.—℞ Sodii pyrophosphatis, ʒii ∋ii (gr. xx per ʒss); aquæ, q.s. ad, ʒiv.

M. Sig.—Tablespoonful, every two to three hours.

For children: gr. x–xv every two hours, or 2 to 3 teaspoonfuls of the above solution.

Physiologic Action and Uses.—For acute inflammatory conditions threatening suppuration.

Sodii Salicylas.—See Salicylas Sodii.

Sodii Sulphas; Glauber's Salt.—See Glauber's Salt.

Sodii Sulphidum: Na_2S.

Method of Administration.—Sulphur Bath: Sod. sulphide 2 oz., sod. chloride 2 oz., sod. bicarb. 1 oz., to 50 to 60 gallons of hot water.

Uses.—Used in lead poisoning.

Sodii Sulphis Exsiccatus: Na_2SO_3 (soluble in 3.2 of water; in alcohol, sparingly).

Adult Dosage.—Av., gr. xv.

Uses.—Antiseptic.

Sodii Sulphocarbolas vel Phenolsulphonas.—See Phenol sulphonas Sodii.

Sodii vel Potassii Telluras.

Adult Dosage.—Min., gr. ¼; max., iss.

Method of Administration.—℞ Sodii telluratis, gr. ss, tabellæ no. 10.

Sig.—One or more tablets, t.i.d.

Uses.—Anhidrotic.

Sodii Thiosulphas; Sodii Hyposulphis.—See Hyposulphis Sodii.

Sodiophosphatum Acidum; Sodii Biphosphas: $NaH_2PO_4+H_2O$ (very soluble in water).

Adult Dosage.—Min., gr. xv; av., xxx; max., ʒi.

Method of Administration.—℞ Sodii biphosphatis, ʒiv; syrupi simplicis, ʒi; aquæ destillatæ, q.s. ad ʒiv.

M. Sig.—One tablespoonful in water every three hours.

It may be given up to one ounce a day in 100 oz. distilled water.

Physiologic Action and Uses.—Urinary acidifier. Do not administer hexamethylenamine until after the acid phosphate has left the stomach.

Somatose (meat albumoses, nearly 90 per cent., with peptones).

Method of Administration.—Three to 4 teaspoonfuls a day, cooked in soup, milk, or cocoa.

Uses.—Concentrated albuminous food.

Spearmint. See Mentha Viridis.

Spermaceti; Cetaceum (a solid fat from the sperm whale).

Uses.—Ointment basis.

Spigeliæ Fluidextractum.

Dosage.—3 years, ♏x–xx; 5 years, ♏xxx. Adult, min., ʒss; av., i; max., ii.

Method of Administration.—℞ Fluidextracti spigeliæ; fluidextracti sennæ, aa ʒss.

M. Sig.—One teaspoonful in water for a child, two teaspoonfuls for an adult, every two hours for three doses.

Uses.—Anthelmintic for ascarides.

Toxic Action.—Vertigo, amblyopia, mydriasis, spasms, convulsions.

Spiritus Ætheris (ether ⅓, alcohol ⅔).

Adult Dosage.—Min., x; av., ʒi; max., ii.

Method of Administration.—℞ Spiritus ætheris, ʒi.

Sig.—Teaspoonful in a wineglass of sweetened water, as required, or every one to three hours.

Uses.—Diffusible stimulant; anodyne; carminative; aids digestion of fats.

Spiritus Ætheris Compositus.—See Ætheris Spiritus Compositus.

Spiritus Ætheris Nitrosi—See Ætheris Spiritus Nitrosi.

Spiritus Ammoniæ Aromaticus.—See Ammoniæ Spiritus Aromaticus.

Spiritus Aurantii Compositus.—See Aurantii Spiritus Compositus.

Spiritus Camphoræ.—See Camphoræ Spiritus.

Spiritus Chloroformi.—See Chloroformi Spiritus.

Spiritus Frumenti; Whiskey (37 to 47.5 per cent. of alcohol, by weight).

Dosage.—6 months, gtt. v–x; 18 months, gtt. x–xx; 3 years, gtt. xx–xxx; 5 years, gtt. xxx–xl. Adult, min., ℥ii; av., ℥ii; max., iv.

Method of Administration.—Every one to four hours, diluted six to ten times with water. No more than ½ to 1 oz. in twenty-four hours to a child of one year or less, 3 to 4 oz. to a child of five years, 10 oz. to an adult.

Physiologic Action and Uses.—General stimulant in its initial effects; followed by sedation and eventually narcosis; diaphoretic, dilating the cutaneous vessels; antipyretic; diuretic; removes inhibition; produces euphoria by blunting the feelings of discomfort; stomachic; antiseptic; local rubefacient.

Spiritus Glonoini vel Glycerylis Nitratis.—See Glonoini Spiritus.

Spiritus Juniperi.—See Juniperi Spiritus.

Spiritus Juniperi Compositus.—See Juniperi Spiritus Compositus.

Spiritus Lavandulæ (oil 5, in alcohol 95).

Adult Dosage.—♏x; av., xxx; max., xlv.

Uses.—Flavoring agent.

Spiritus Menthæ Piperitæ.—See Menthæ Piperitæ Spiritus.

Spiritus Menthæ Viridis.—See Menthæ Viridis Spiritus.

Spiritus Mindereri; Liquor Ammonii Acetatis.—See Ammonii Acetatis Liquor.

Spiritus Myrciæ Compositus; Bay Rum (oil of myrcia 16, oil of orange peel 1, oil of pimenta 1, alcohol 1220, water to 2000).

Uses.—Perfume; cutaneous stimulant.

Spiritus Rectificatus (90 per cent. alcohol).

Spiritus Rosmarini.

Uses.—Cutaneous stimulant.

Spiritus Terebinthinæ. See Oleum Terebinthinæ Rectificatum.

Spiritus Vini Gallici; Brandy.—See Brandy.

Spiritus Vini Rectificatus (90 per cent. alcohol).

Squibb's Surgical Powder; Squibb's Compound Alum Powder.

A heaping teaspoonful suspended in 500 c.c. hot water, as a local styptic.

Stagnin (an extract derived from the spleen of the horse by autolysis).

Uses.—Hæmostatic and styptic.

Starch; Amylum; Corn Starch: $C_6H_{10}O_5$.

Uses.—Vehicle; protective.

Stramonii Unguentum (ext. stramonii 10, diluted alcohol 5, benzoinated lard 65, lanolin 20).

Uses.—Anodyne.

Stramonium.

Adult Dosage.—Min., gr. ss; av., i; max., iii.

Physiologic Action and Uses.—Component of "asthma powders"; action similar to that of belladonna.

Strontii Bromidum: see Bromidum Strontii.

Strophanthinum (glucoside or mixture of glucosides; very soluble in water and in diluted alcohol).

Dosage.—Adult, min., gr. ⅓₀₀; av.,⅓₂₀₀; max., ⅓₆₀.

Method of Administration.—Intramuscularly or intravenously, once daily for two to three days. The effects last several days. It is not readily absorbed from the gastro-intestinal tract, hence its use by mouth is not advised. It should be borne in mind that the drug in overdose is highly poisonous.

Physiologic Action and Uses.—Cardiac tonic; diuretic; slows and strengthens the heart, and raises the arterial tension, but not by vaso-constriction.

Caution: do not use strophanthin for at least two days after digitalis has been administered. It is best given intravenously (*q.v.* in Part 1) at the same time that digitalis is administered by mouth, for the latter does not act for twenty-four hours. Do not repeat oftener than every twenty-four hours.

Toxic Action.—Paralysis of voluntary and involuntary and cardiac muscle by direct action.

Strophanthi Tinctura (10 per cent.; should be standardized or biologically assayed by producing death in frogs).

Dosage.—6 months, gt. i; 18 months, gtt. i–ii; 3 years, gtt. ii; 5 years, gtt. ii–iii; 5 to 10 years, gtt. iii–v. Adult, min., ♏v; av., viii; max., x.

Method of Administration.—℞ Tincturæ strophanthi, ℥ss.

Sig.— drops in water or cocoa, every two, three to four hours; no more than six doses in twenty-four hours. (Kerley.) Action by mouth uncertain.

For intramuscular or intravenous injection: "Not more than 2 minims as a rule." *Useful Drugs of A.M.A.*

Strychnina: Alkaloid, $C_{21}H_{22}N_2O_2$ (soluble in 6420 of water and 136 of alcohol).

Dosage.—6 months, gr. ⅓₀₀–⅓₂₀₀; 18 months, gr. ⅓₁₅₀, 3 years, gr.⅓₁₀₀; 5 years, gr. ⅓₁₀₀. Adult, min., gr. ⅓₆₀; av., ⅓₂₀; max., ⅓₁₂.

Method of Administration.—As a heart stimulant, gr. ⅓₆₀, every six hours, is perhaps frequent enough. Gr. ⅓₆₀ may be administered every two to four hours until facial twitching occurs.

Gr. ⅓₄₀ may be prescribed t.i.d., and gradually increased to gr. ⅓₂₀–⅓₁₅–⅓₁₀, t.i.d., if desired.

Physiologic Action and Uses.—Stomachic bitter and general stimulant and tonic; sensitizes the sensory or perceptive portion of the reflex arcs in the central nervous system, causing increased reflex irritability, and intensification of the five senses; increases the excitability of the respiratory, vagus, and vaso-constrictor centres; increases the extent and duration of muscular contraction; increases intestinal peristalsis by stimulation of Auerbach's plexuses.

Strychninæ Nitras: $C_{21}H_{22}N_2O_2.HNO_3$ (soluble in 42 of water and 150 of alcohol).

Dosage.—6 months, gr. ⅓₄₀₀–⅓₂₀₀; 18 months, gr. ⅓₁₅₀; 3 years, gr. ⅓₁₀₀; 5 years, gr. ⅓₁₀₀. Adult, min., gr. ⅓₆₀; av., ⅓₂₀; max., ⅓₁₂.

Strychninæ Sulphas: $(C_{21}H_{22}N_2O_2)_2H_2SO_4+5H_2O$.

Dosage.—6 months, gr. ⅓₄₀₀–⅓₂₀₀; 18 months, gr. ⅓₁₅₀; 3 years, gr. ⅓₁₀₀; 5 years, gr. ⅓₁₀₀. Adult, min., gr. ⅓₆₀; av., ⅓₂₀; max., ⅓₁₂.

Stypticin; see Cotarninæ Hydrochloridum.

Styptol; see Cotarninæ Phthalas.

Suet; Sevum Præparatum; prepared mutton suet.

Uses.—Ointment basis. Do not use if rancid.

Sugar. See Saccharum.

Sulphocarbolas Sodii; see Phenolsulphonas Sodii.

Sulphocarbolas Zinci; see Phenolsulphonas Zinci.

Sulphonal; Sulphonmethanum; Diethylsulphonedimethylmethane: $(CH_3)_2=C=(SO_2C_2H_5)_2$ (soluble in 365 of water and 60 of alcohol).

Adult Dosage.—Min., gr. x; av., xii; max., xxx.

Method of Administration.—℞ Sulphonmethani, gr. xii, pulveres no. iii.

Sig.—One powder, in hot milk or water, one to two hours before bedtime.

Physiologic Action and Uses.—Hypnotic; acts in one to two hours; promotes sleep by impairing the perception of sensory impressions; dangerous.

Toxic Action.—Vomiting, diarrhœa or constipation, confusion, headache, vertigo, abdominal pain, ataxia, ascending paralysis, ptosis, oliguria, albuminuria, hæmatoporphyrinuria, tinnitus, œdema.

Sulphonethylmethanum; Trional; Diethylsulphonemethylethylmethane: $(CH_3)(C_2H_5)C(SO_2C_2H_5)_2$ (soluble in 200 of water; freely soluble in alcohol).

Adult Dosage.—Min., gr. x; av., xii; max., xxx.

Method of Administration.—℞ Sulphonethylmethani, gr. xii, pulveres no. iii.

Sig.—One powder, in a hot liquid, one-half to one hour before retiring.

Give alkalies freely while administering trional. Do not use for more than two or three days consecutively.

Physiologic Action and Uses.—Hypnotic; acts in one-half to one hour, sometimes not until the next day; action is transient; promotes sleep by impairing the perception of external stimuli.

Toxic Action.—Hæmatoporphyrinuria (indicated by a pinkish or red color), lassitude, weakness, nausea, diarrhœa or constipation, followed by abdominal tenderness, vomiting, ataxia, paresis of various muscles, loss of reflexes, nephritis, finally collapse and usually death. It is often too late to save the patient when hæmatoporphyrinuria occurs.

Sulphur Bath. See Baths, Medicated.

Sulphuricum Acidum Aromaticum (an ether consisting of sulphuric acid, H_2SO_4, 11 per cent. by volume in alcohol, flavored with cinnamon and ginger).

Adult Dosage.—Min., ♏v; av., xv; max., xx.

Method of Administration.—℞ Acidi sulphurici aromatici, ℥i.

Sig.—Fifteen drops in a wineglassful of sweetened water, every three to four hours, taken through a glass tube. Rinse the mouth afterward with soda water.

Uses.—Astringent; hæmostatic; urinary acidifier.

Sulphuricum Acidum Dilutum (10 per cent. of H_2SO_4 by weight).

Adult Dosage.—Min., ♏v; av., xxx; max., xl.

Method of Administration.—℞ Acidi sulphurici diluti, ℥i.

Sig.—Thirty drops in half a glass of sweetened water, every three to four hours, taken through a glass tube. Rinse the mouth afterward with soda water.

Uses.—Astringent; hæmostatic; urinary acidifier.

Sulphuris Unguentum (washed sulphur 15, benzoinated lard 85).

Uses.—Antiseptic; parasiticide; keratolytic.

Sulphur Lotum; Washed Sulphur.

Dosage.—6 months, gr. v; 18 months, gr. v–x; 3 years, gr. xv–xxx; 5 years, ℥i. Adult, min., ℥ss; av., ii; max., iv.

Method of Administration.—℞ Sulphuris loti vel præcipitati, ℥i (℥i per dose); syrupi acaciæ, ℥ii; aquæ, q.s. ad, ℥iv.

M. Sig.—Tablespoonful, t.i.d.

Physiologic Action and Uses.—Laxative; alterative; parasiticide; as a purgative, acts chiefly on the large bowel after conversion into hydrogen sulphide or other sulphides, which are antiseptic and irritant; converted also into sulphides on the skin.

Toxic Action.—Vomiting, purging, anæmia, emaciation, debility.

Sulphurosum Acidum H_2SO_3.

Adult Dosage.—Min., ♏v; av., xxx; max., lx.

Method of Administration.—Antiseptic spray or application to mucous membranes and skin.

Uses.—Local antiseptic; gastric antifermentative.

Sulphur Præcipitatum; Lac Sulphuris.

Dosage.—6 months, gr. v; 18 months, gr. v–x; 3 years, gr. xv–xxx; 5 years, ℥i. Adult, min., ℥ss; av., ii; max., iv.

Method of Administration.—See under Sulphur Lotum.

Sulphur Sublimatum; Sublimed Sulphur.

Adult Dosage.—Min., ℥ss; av., ii; max., iv. For room disinfection burn 3 pounds sulphur to each 1000 cubic feet of air space. All surfaces and articles should be wet.

Sumbul Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., ℥i.

Method of Administration.—℞ Fluidextracti sumbul, ℥i.

Sig.—Thirty drops in water, t.i.d.

Uses.—Antispasmodic; nerve tonic.

Suppositoria Glycerini (sod. carb. gr. ¾, stearic acid gr. iii, glyc. gr. xlvi).

Uses.—Laxative, by reflex action.

Suprarenalis Extractum; Powdered Adrenal Gland (about 0.5 per cent. of epinephrin).

Adult Dosage.—Min., gr. iii; av., v; max., xx.

Method of Administration.—℞ Glandulæ suprarenalis siccæ, gr. v–xx.

Mitte talis pulveres no. 21.

Sig.—One powder, by mouth, t.i.d.

Gr. ii+ every half hour to a one-year old, for hæmatemesis. (Holt.)

Uses.—Used in Addison's Disease and in hæmatemesis.

Synol Soap.

Uses.—Instrument lubricant.

Syrupus; Syrupus Simplex (sugar 85, distilled water to 100).

Uses.—Flavor and vehicle.

Syrupus Acaciæ. See Acaciæ, Syrupus.

Syrupus Acidi Citrici. See Acidi Citrici, Syrupus.

Syrupus Acidi Hydriodici. See Acidi, Hydriodici, Syrupus.

Syrupus Allii. See Allii, Syrupus.

Syrupus Aurantii. See Aurantii Syrupus.

Syrupus Calcii Lactophosphatis. See Calcii Lactophosphatis, Syrupus.

Syrupus Cinnamomi.

Uses.—Flavoring vehicle.

Syrupus Ferri Iodidi (FeI_2). See Ferri Iodidi Syrupus.

Syrupus Ferri Quininæ et Strychninæ Phosphatum.

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Syrupi ferri, quininæ, et strychninæ phosphati, ℥iv.

Sig.—Teaspoonful, in half a tumbler of water, t.i.d.p.c.

Uses.—Hæmatic; tonic.

Syrupus Glycyrrhizæ N. F. (Fluidglycerate of Glycyrrhiza, 25 per cent., in syrup).

Adult Dosage.—Av., ℥ii.

Uses.—Flavor.

Syrupus Hypophosphitum. See Hypophosphitum Syrupus.

Syrupus Ipecacuanhæ. See Ipecacuanhæ Syrupus.

Syrupus Ipecacuanhæ et Opii; Syrup of Dover's Powder, N. F. (tr. of ipecac and opium, 8.5 per cent., flavored with spirit of cinnamon and cinnamon water in syrup).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Uses.—Nervous sedative; sedative expectorant; diaphoretic.

Syrupus Limonis. See Acidi Citrici, Syrupus.

Syrupus Mannæ N. F. (Manna 12.5 per cent., alcohol, and syrup).

Adult Dosage.—Av., ℥ii.

Uses.—Mild laxative.

Syrupus Picis Liquidæ. See Picis Liquidæ Syrupus.

Syrupus Pruni Virginianæ. See Pruni Virginianæ, Syrupus.

Syrupus Rhei Aromaticus. See Rhei, Syrupus Aromaticus.

Syrupus Rubi Idæi; see Raspberry Syrup.

Syrupus Sarsaparillæ Compositus see Sarsaparillæ, Syrupus Compositus.

Syrupus Scillæ; see Scillæ Syrupus.

Syrupus Sennæ; see Sennæ Syrupus.

Syrupus Simplex (sugar 85, distilled water to 100).

Uses.—Flavor and vehicle.

Syrupus Tolutanus; Syrup of Tolu (tr. of tolu 5, syrup to 100).

Adult Dosage.—Min., ʒi; av., iv; max., vi.

Uses.—Stimulating expectorant; flavored vehicle in cough mixtures.

Syrupus Zingiberis; Syrup of Ginger (fl. ext. ginger 3, alcohol 2, syrup to 100).

Adult Dosage.—Min., ʒi; av., iv; max., ʒi.

Uses.—Flavor; carminative.

Taka-Diastasum (Starch-digesting enzyme obtained from the mould, Eurotium oryzæ, of the aspergillus family, which grows upon hydrolized wheat bran).

Adult Dosage.—Min., gr. i; max., v.

Method of Administration.—℞ Taka-diastasi, gr. iii, tabellæ no. 30.

Sig.—Tablet, before, with, or after meals.

Physiologic Action and Uses.—Amylolytic enzyme, three times more active than malt diastase; acts in neutral, acid, or alkaline media.

Talcum Purificatum (Purified native hydrous magnesium silicate).

Uses.—Dusting powder; clarifying agent.

Tanaceti Oleum; see Oleum Tanaceti.

Tannalbin; Albuminis Tannas.

Dosage.—6 months, gr. i–ii; 18 months, gr. i–ii; 3 years gr. ii–iii; 5 years, gr. iii–v. Adult, min., gr. x, av., xxx; max., ʒi.

Method of Administration.—℞ Albuminis tannatis, gr. xxx, pulveres, tabellæ, vel capsulæ no. 12.

Sig.—One, t.i.d., followed by water.

℞ Albuminis tannatis, gr. xl (gr. v per dram); syrupi acaciæ, ʒiv; aquæ, q.s., ad, ʒi.

M. Sig.—Shake well, and give one dram three to four times daily.

Physiologic Action and Uses.—Astringent; insoluble in gastric juice, but slowly splits off tannic acid in the intestine.

Tannici Acidi Glyceritum (tannic acid 1, glycerine 4).

Adult Dosage.—Av., ♏xxx.

Uses.—Astringent; hardening agent for sore nipples; throat paint. As a gargle or spray: ʒi ad aquam Oi.

Tannici Acidi Unguentum (20 per cent. in glyc. and petrolatum).

Uses.—Astringent emollient; useful in the treatment of hemorrhoids.

Tannicum Acidum; Tannin (soluble in 1 of water; very soluble in alcohol and glycerine).

Adult Dosage.—Min., gr. ii; av., x; max., xx.

Method of Administration.—℞ Acidi tannici, gr.x. Mitte talis trochisci sive pilulæ sive capsulæ no. 12.

Sig.—One, t.i.d.

As a gargle, ʒi ad Oi, or gr. v-x ad ʒi, as a spray. As an astringent enema, 1 to 2 per cent. solution.

Physiologic Action and Uses.—Astringent; hæmostatic. It coagulates protein in or on the tissues, and thus hardens them.

Toxic Action.—Vomiting due to gastric irritation.

Tannigen; Acidum Tannicum Diacetylicum: $(CH_3.CO)_2C_{14}H_8O_9$.

Dosage.—6 months, gr. i–ii; 18 months, gr. i–ii, 3 years, gr. ii–iii; 5 years, gr. iii–v. Adult, min.; gr. viii; max., xv.

Method of Administration.—℞ Tannigen, gr. x, pulveres no. 12.

Sig.—One, four times a day, dry on the tongue, followed by a swallow of water; or it may be sprinkled on food. It may be given up to ʒii daily.

Physiologic Action and Uses.—Astringent; insoluble in the gastric juice, but splits off tannic acid in the alkaline fluid of the intestine.

Tannin; Acidum Tannicum (soluble in 1 of water; very soluble in alcohol and glycerine).

Adult Dosage.—Min., gr. ii; av., x; max., xx.

Method of Administration.—℞ Acidi tannici, gr. x. Mitte talis trochisci, sive pilulæ sive capsulæ no 12.

Sig.—One, t.i.d.

As a gargle, ʒi ad Oi. As an astringent enema, 1 to 2 per cent. solution.

Physiologic Action and Uses.—Astringent; hæmostatic. It coagulates protein in or on the tissues, and thus hardens them.

Toxic Action.—Vomiting, due to gastric irritation.

Tannocol (Tannic acid and gelatin, aa).

Adult Dosage.—Min., gr. vii; max., xv.

Method of Administration.—℞ Tannocol, gr. x, pulveres no. 12.

Sig.—Powder, dry on the tongue, followed by a swallow of water, and repeated 3 to 5 times daily.

Uses.—Intestinal astringent.

Tannoform; Tanninformaldehydum: $CH_2(C_{14}H_9O_9)_2$.

Adult Dosage.—Min., gr. iv; av., viii; max., xv.

Method of Administration.—℞ Tanninformaldehydi, gr. viii, capsulæ no 12 (glutoid caps., no. 2 or 3 of hardness).

Sig.—One capsule, three to four times daily.

As a local antiseptic and anhidrotic: 20 to 50 per cent. mixture with starch or talcum; or 10 per cent. ointment.

Uses.—Astringent; local antiseptic and anhidrotic.

Tannopin, Hexamethylene-Tetramine-Tannin: $(C_{14}H_{10}O_9)_3.(CH_2)_6N_4$.

Dosage.—18 months, gr. v; 3 years, gr. v; 5 years, gr. viii. Adult, av., gr. xv.

Method of Administration.—℞ Tannopin, gr. xv, pulveres no. 12.

Sig.—A powder, four times a day, dry on the tongue, followed by a swallow of water, or it may be sprinkled on food.

Physiologic Action and Uses.—Intestinal astringent and antiseptic; insoluble in the gastric juice, but breaks up into tannic acid in the alkaline fluids of the intestine.

Tar. See Pix Liquida and Pix Carbonis.

Tartar Emetic; see Antimonii et Potassii Tartras.

Tartaricum Acidum.—See Acidum Tartaricum.

Telluras Sodii vel Potassii.

Adult Dosage.—Min., gr. ¼; max., iss.

Method of Administration.—℞ Sodii vel potassii telluratis, gr. ss, tabellæ no. 10.

Sig.—One or more tablets t.i.d.

Uses.—Anhidrotic.

Terebenum (mixture of terpenes formed by the action of sulphuric acid on oil of turpentine; only slightly soluble in water; soluble in 3 of alcohol).

Dosage.—18 months, gt. i; 3 years, gtt. i–ii; 5 years, gtt. ii. Adult, min., ♏v; av., viii; max., xv.

Method of Administration.—℞ Terebini, ʒii.

Sig.—Five drops on sugar, t.i.d. It may also be administered in capsule.

For inhalation: ʒiss during the twenty-four hours.

Uses.—Stimulating expectorant; broncho-pulmonary antiseptic.

Terebinthinæ Aceticum Linimentum (oil of turpentine 4, glacial acetic acid 1, liniment of camphor 4).

Uses.—Rubefacient and counter irritant.

Terebinthinæ Linimentum (oil of turpentine 35, rosin cerate 65).

Uses.—Rubefacient and counter-irritant.

Terebinthinæ Olei Emulsum (rectified oil 15, expressed oil of almond 5, syrup 25, acacia 15, water to 100).

Adult Dosage.—Min., ℥ss; av., i; max., ii+.

Method of Administration.—℞ Emulsi olei terebinthinæ, ℥iv. (♏iii per dram.)

Sig.—Teaspoonful, three to six times daily together with plenty of water. The taste may be disguised with oil of gaultheria, ♏i to the dose.

Action and Uses.—See under Oleum Terebinthinæ.

Toxic Action.—Vomiting, diarrhoea, lumbar pain, dysuria, strangury, hæmaturia, anuria, muscular weakness, incoördination, narcosis.

Terebinthinæ Oleum Rectificatum.—See Oleum Terebinthinæ Rectificatum.

Terpini Hydras: $C_{10}H_{18}(OH)_2+H_2O$ (soluble in 200 of water and 13 of alcohol).

Dosage.—3 years, gr. ¼; 5 years, gr. ss. Adult, min., gr. i; av., ii; max., v.

Method of Administration.—℞ Terpini hydratis, gr. ii, pulveres, tabellæ, vel capsulæ no. 12.

Sig.—One, every three to four hours, with plenty of water.

Uses.—Broncho-pulmonary antiseptic; stimulating expectorant; diaphoretic; diuretic; used in profuse bronchorrhea.

Terpini Hydratis Elixir N. F. (Terpin hydrate 1.75 per cent., tr. of sweet orange peel, spirit of bitter almond, alcohol about 42 per cent., glycerine, syrup, and water).

Adult Dosage.—Av., ℥i.

Method of Administration.—℞ Elixiris terpini hydratis, N. F., ℥ii.

Sig.—Teaspoonful every three to four hours, with plenty of water.

Uses.—Counter irritant; external and intestinal antiseptic; anthelmintic; carminative; irritating diuretic; hæmostatic; broncho-pulmonary antiseptic and deodorizer; stimulant.

Terra Silicea Purificata; Silica: SiO_2.

Uses.—Clarifying agent.

Tetranitrin; Erythrol Tetranitras: $C_4H_6(NO_3)_4$.

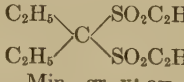
Adult Dosage.—Min., gr. ½; av., ½; max., i.

Method of Administration.—℞ Erythrol tetranitratis, gr. ½, tabellæ no. 100.

℞ One tablet every three to six hours, gradually increased to gr. ½–¾–i, or until the occurrence of flushing, throbbing, or slight transient faintness indicate that the physiological dose has been reached.

Physiologic Action and Uses.—Vasodilator, acting directly upon the vascular muscle; action begins in fifteen minutes and persists for three or four to six hours.

Tetronal; Diethylsulphon-diethyl-methane



Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Uses.—Hypnotic.

Thallini Sulphas; Sulphate of Tetra-hydro-para-methyloxy-chinoline (soluble in water).

Adult Dosage.—Min., gr. ii; av., v; max., xv.

Method of Administration.—℞ Thallini sulphatis, gr. v, tabellæ no. 3.

Sig.—One tablet.

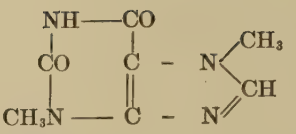
Uses.—Antipyretic.

Toxic Action.—Profuse sweating and depression.

Theobromatis Oleum; Cacao Butter (melts at body temperature).

Uses.—Emollient; lubricant in massage; suppository basis.

Theobromina; 3, 7-dimethyl-xanthin; (very slightly soluble in water, but soluble in 100 of alcohol).



Method of Administration.—℞ Theobrominæ, gr. v–viiss, pulveres no. 6.

Sig.—A powder every three hours for six doses.

Physiologic Action and Uses.—Diuretic (non-irritating to kidneys); irritant to the stomach. Dilates the renal vessels by a direct relaxant action; also dilates the coronary vessels by peripheral action; better than caffeine because of the very slight action on the vasoconstrictor centre in the medulla. All diuretics should be administered for only one or two days at a time, preferably one day.

Theobrominæ Sodio-Acetas; Agurin; $NaC_7H_7N_4O_2+NaC_2H_3O_2$ (soluble in water).

Adult Dosage.—Min., gr. v; max., xv.

Method of Administration.—℞ Theobrominæ sodio-acetatis, gr. xv.

Mitte talis trochisci sive capsulæ sive pulveres no. 12.

Sig.—One, t.i.d. in water.

Physiologic Action and Uses.—Diuretic (non-irritating); does not irritate the stomach. See under Theobromina.

Theobrominæ Sodio-Salicylas; Diuretin (soluble in 1 part of water).

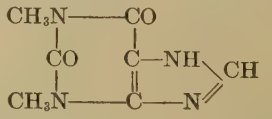
Adult Dosage.—Min., gr. x; av., xv; max., xx.

Method of Administration.—℞ Theobrominæ sodio-salicylatis, gr. xv, pulveres in charta cerata no. 12. Dispense in a well-sealed bottle, for it rapidly absorbs carbonic acid from the air and decomposes.

Sig.—One powder, dissolved in hot water, two to four times a day, up to ℥ss–iss in twenty-four hours, avoiding acids and acid vegetable juices, which precipitate the alkaloid.

Physiologic Action and Uses.—Diuretic; non-irritating to the stomach. See under Theobromina.

Theophyllina: Theocin; 1, 3-dimethyl-xanthin (soluble in 100 of water; and in 80 of alcohol).



Adult Dosage.—Min., gr. iii; av., iv; max., viiss.

Method of Administration.—℞ Theophyllinæ, gr. iv, pulveres in charta cerata no. 12.

Sig.—A powder in a hot drink, well diluted, two, three to four times daily for two to three days, followed by a theobromine salt.

Physiologic Action and Uses.—Diuretic, more powerful than theobromine, but its action not so lasting. Diuresis may not follow for forty-eight hours. After three to four days the drug ceases to act as a diuretic. It dilates the renal vessels by a direct relaxant action; also dilates the coronary vessels by peripheral action; better than caffeine because of the very slight action on the vasoconstrictor centre.

Toxic Action.—Vomiting, diarrhœa.

Thigenol (solution of Sodium Sulpho-Oleate; containing 2.85 per cent. sulphur; very soluble in distilled water, dilute alcohol, glycerine, chloroform, and oily or fatty bases; hard water causes a precipitate).

Adult Dosage.—Min., gr. iii; max., x.

Method of Administration.—℞ Thigenol, ℥i (gr. viiss per dose); syrupi simplicis, ℥ii; aquæ destillatæ, q.s. ad ℥iv.

M. Sig.—Tablespoonful, t.i.d.

Locally it may be used pure, or mixed in any proportion with ointment bases or glycerine.

Physiologic Action and Uses.—Said to stimulate granulation, restrict secretion, and to be antipruritic; used in skin and uterine diseases.

Thiocol; Potassium Guaiacol Sulphonate (readily soluble in water).

Adult Dosage.—Min., gr. vii; max., xxx; up to ʒiss–iv daily, by mouth or hypodermically.

Method of Administration.—℞ Thiocol gr. x, pilulæ no. 30.

Sig.—One pill, t.i.d.p.c. It may also be prescribed in solution.

Uses.—Bronchial stimulant and antiseptic; tonic.

Thiosinamina; Allyl Sulphocarbamide: $(NH_2).CS.NHCH_2.CH:CH_2$.

Adult Dosage.—Min., gr. ss; av., i; max., iss.

Method of Administration.—℞ Thiosinaminæ, gr. i–iss, capsulæ vel tabellæ no. 60.

Sig.—One, t.i.d.

Hypodermically, gr. i–v in 15 per cent. alcoholic or 10 per cent. glycerinated water solution, every third day, beginning with the smaller doses.

℞ Thiosinaminæ, gr. viii (about gr. iss ad ♏xx); glycerini, ♏xx; aquæ, q.s. ad ♏cx.

Dissolve with gentle heat. Sig.—Inject, every third day, about 20 minims, beginning with smaller doses.

Physiologic Action and Uses.—Promotes the absorption of scar tissue; contraindicated in tuberculosis. "Thiosinamine cannot be dissolved in water, and the alcoholic and glycerine solutions produce local irritation"; but fibrolysin solutions are free from this fault.—N. and N.O.R.

Toxic Action.—Digestive disturbance, lassitude, fever.

Thiosinaminæ Sodio-Salicylatis, Liquor.—See Fibrolysin.

Thorium-X.—Used in pernicious anæmia.

Thujæ Fluidextractum.

Adult Dosage.—Av., ♏xxx.

Method of Administration.—℞ Fluidextracti thujæ, ʒi.

Sig.—♏v, in water, t.i.d., for the removal of warts, together with its local application.

Thymæ Glandulæ Dessicatæ.

Adult Dosage.—gr. ii-iv-xxv-lxxv.

Method of Administration.—℞ Glandulæ thymæ dessicati, gr. iv, tabellæ no. 30.

Sig.—Tablet, t.i.d.

Uses.—Used empirically in infantile marasmus, rickets, hæmophilia, hyperthyroidism, tuberculosis.

Thymi Oleum; Oil of Thyme.

Adult Dosage.—Min., ♏i; av., iii; max., v.

Thymol; Methylisopropylphenol: $C_6H_3(CH_3)(OH)(C_3H_7)$—1 : 3 : 4 (soluble in 1010 of water; in 1 of alcohol).

Dosage.—3 years, gr. v; 5 years, gr. v–xv. Adult, min., gr. xv; av., xxx; max., ʒi.

Method of Administration.—For the administration of thymol in hookworm disease, see Part 1.

For flatulence: gr. i in pill, three to four times a day.

For gastric lavage: a solution of 1 : 2000.

As an antiseptic spray: 1 : 1010, or a saturated solution.

As an ointment: gr. v–xxx ad ʒi.

Uses.—Antiseptic; anthelmintic.

Toxic Action.—Weakness, collapse, albuminuria, diminished reflexes, slow respiration, low temperature and arterial tension, coma. Give saline cathartics and water copiously; no alcohol.

Thymolis Iodidum; Aristol; Dithymol-di-iodid: $(C_6H_2.CH_3.C_3H_7OI)_2$.

Uses.—Antiseptic powder; less efficient than iodoform.

Thyroideum Siccum.—See Glandulæ Thyroideæ Siccæ.

Thyroidin.—See Iodothyrin.

Tiglii Oleum.—See Croton Oil.

Tinctura Aconiti.—See Aconiti Tinctura.

Tinctura Apocyni.—See Apocyni.

Tinctura Asafœtidæ.—See Asafœtidæ Tinctura.

Tinctura Aurantii Amari; Tincture of Bitter Orange Peel.

Adult Dosage.—Min., ʒi; max., ii.

Uses.—Flavoring agent.

Tinctura Aurantii Dulcis; Tincture of Sweet Orange Peel.

Adult Dosage.—Min., ʒi; max., ii.

Uses.—Flavoring agent.

Tinctura Belladonnæ Foliorum.—See Belladonnæ Foliorum Tinctura.

Tinctura Benzoini.—See Benzoini Tinctura.

Tinctura Benzoini Composita.—See Benzoini Tinctura Composita.

Tinctura Calumbæ.—See Calumbæ Tinctura.

Tinctura Cannabis Indicæ.—See Cannabis Indicæ Tinctura.

Tinctura Cantharidis.—See Cantharidis Tinctura.

Tinctura Capsici.—See Capsici Tinctura.

Tinctura Cardamomi.—See Cardamomi Tinctura.

Tinctura Cardamomi Composita.—See Cardamomi Tinctura Composita.

Tinctura Catechu (Gambir) **Composita.**—See Catechu.

Tinctura Cimicifugæ.—See Cimicifugæ Tinctura.

Tinctura Cinchonæ—See Cinchonæ Tinctura.

Tinctura Cinchonæ Composita.—See Cinchonæ Tinctura Composita.

Tinctura Cinnamomi—See Cinnamomi Tinctura.

Tinctura Cocculi Indici (10 per cent. in diluted alcohol).

Method of Administration.—For destroying pediculi, dilute with 1, 2, or 3 parts of water.

Uses.—Parasiticide; source of picrotoxin.

Tinctura Cocculi Orientalis.

Method of Administration.—Ten to fifteen drops daily, for giddiness (?).

Tinctura Colchici Seminis.—See Colchici Seminis Tinctura.

Tinctura Digitalis.—See Digitalis Tinctura.

Tinctura Ferri Chloridi.—See Ferri Perchloridi Tinctura.

Tinctura Ferri Pomata.—See Ferri Pomata Tinctura.

Tinctura Gambir.—See Catechu Tinctura Composita.

Tinctura Gelsemii.—See Gelsemii Tinctura.

Tinctura Gentianæ Composita.—See Gentianæ Tinctura Composita.

Tinctura Guaiaci.—See Guaiaci Tinctura.

Tinctura Guaiaci Ammoniata.—See Guaiaci Tinctura Ammoniata.

Tinctura Humuli.—See Humuli Tinctura.

Tinctura Hydrastis.—See Hydrastis Tinctura.

Tinctura Hyoscyami.—See Hyoscyami Tinctura.

Tinctura Iodi.—See Iodi Tinctura.

Tinctura Iodi Churchillii: ℞ Iodi, gr. lxxv; potassii iodidi, ʒiss; alcoholis, ʒi. Local antiseptic and counter-irritant.

Tinctura Ipecacuanhæ et Opii.—See Ipecacuanhæ et Opii Tinctura.

Tinctura Kino.—See Kino Tinctura.

Tinctura Krameriæ.—See Krameriæ Tinctura.

Tinctura Lavandulæ Composita.—See Lavandulæ Tinctura Composita.

Tinctura Limonis Corticis (50 per cent.).
Adult Dosage.—Min., ʒss; max., iv.
Uses.—Flavor.
Tinctura Lobeliæ.—See Lobeliæ Tinctura.
Tinctura Myrrhæ.—See Myrrhæ Tinctura.
Tinctura Nucis Vomicæ.—See Nucis Vomicæ Tinctura.
Tinctura Opii.—See Laudanum.
Tinctura Opii Camphorata. See Opii Tinctura Camphorata.
Tinctura Opii Deodorati. See Opii Tinctura Deodorati.
Tinctura Physostigmatis. See Physostigmatis Tinctura.
Tinctura Picis Carbonis Composita; Compound Tincture of Coal Tar.
Tinctura Picis Liquidæ Composita; Compound Tincture of Pine Tar.
Tinctura Pulsatillæ. See Pulsatillæ Tinctura.
Tinctura Quassiæ. See Quassiæ Tinctura.
Tinctura Rhataniæ. See Krameriæ Tinctura.
Tinctura Rhei Aromatica. See Rhei Tinctura Aromatica.
Tinctura Rhoïs Toxicodendri. See Rhoïs Toxicodendri Tinctura.
Tinctura Scillæ. See Scillæ Tinctura.
Tinctura Strophanthi. See Strophanthi Tinctura.
Tinctura Valerianæ (20 per cent.).
Adult Dosage.—Min., ʒss–i; av., ii; max., iv.
Method of Administration.—℞ Tincturæ valerianæ, ʒii.
Sig.—Teaspoonful in water, every two hours.
Uses.—Antispasmodic; nerve sedative.
Tinctura Valerianæ Ammoniata (valerian 20, arom. spt. ammonia to 100).
Adult Dosage.—Min., ♏v; av., xxx; max., ʒii.
Method of Administration.—℞ Tincturæ valerianæ ammoniatæ, ʒii.
Sig.—Half to one teaspoonful, well diluted in water, every two to three hours.
Uses.—Antispasmodic; gentle stimulant.
Tinctura Veratri Viridis (10 per cent.).
Adult Dosage.—Min., ♏viii; av., xv; max., xxx.
Method of Administration.—For eclampsia (Edgar): 10 to 20 minims subcutaneously, then 10 minims every half hour, "till the pulse continues below sixty to the minute."
Physiologic Action and Uses.—Increases the excitability of voluntary muscle, with the occurrence of contracture or slow relaxation following stimulation; exerts the same action on the heart muscle, causing slowing and a fall of blood-pressure; may also stimulate the vagus centre; antipyretic by action on the heat regulating centre.
Tinctura Zingiberis; Tincture of Jamaica Ginger (20 per cent.).
Adult Dosage.—Min., ♏x; av., xxx; max., ʒi.
Uses.—Flavor; carminative; stimulant.
Tolutanum Balsamum (contains benzoin or its derivatives; soluble in alcohol, nearly insoluble in water).
Adult Dosage.—Min., gr. v; av., xv; max., xx.
Method of Administration.—℞ Balsami tolutani, ʒiv (gr. xv per dram); mucilaginis acaciæ, q.s. ad ʒii.
M. Sig.—One dram two or three times a day.
Uses.—Stimulating and disinfecting expectorant.
Tolutanus Syrupus; Syrup of Tolu (tr. of Tolu 5, syrup to 100).
Adult Dosage.—Min., ʒi; av., iv; max., vi.
Uses.—Stimulating expectorant; flavored vehicle in cough mixtures.
Tragacanthæ Mucilago (Tragacanth 6, glycerine 18, water to 100).
Adult Dosage.—Av., ʒiv+.
Uses.—Demulcent; used to suspend insoluble powders in mixtures.
Traumaticin (10 per cent. solution of gutta-percha in chloroform). For application to slight wounds as a protective covering. The chloroform evaporates, leaving a thin, adherent pellicle.
Trichloraceticum Acidum: CCl_3COOH.
Uses.—Caustic; antiseptic; styptic.
Trinitrophenol; Picric Acid: See Acidum Picricum.
Trional; Sulphonethylmethanum; Diethylsulphone-methylmethane: $(CH_3)(C_2H_5)C(SO_2C_2H_5)_2$ (soluble in 200 of water; freely soluble in alcohol).
Adult Dosage.—Min., gr. x; av., xii; max., xxx.
Method of Administration.—℞ Sulphonethylmethani, gr. xii, pulveres no. iii.
Sig.—One powder, in a hot liquid, one-half to one hour before retiring. Give alkalies freely while administering trional. Do not use for more than two to three days consecutively.
Physiologic Action and Uses.—Hypnotic, acts in one-half to one hour, sometimes not until the next day; action is transient; promotes sleep by impairing the perception of external stimuli.
Toxic Action.—Hæmatoporphyrinuria (indicated by a pinkish or red color), lassitude, weakness, nausea, diarrhœa or constipation, followed by abdominal tenderness, vomiting, ataxia, paresis of various muscles, loss of reflexes, nephritis, finally collapse and usually death. It is often too late to save the patient when hæmatoporphyrinuria appears.
Triphenin; Propionyl Phenetidin: $C_6H_4(OC_2H_5)NH.(CH_3CH_2CO)$. (Soluble in 2000 of water; soluble in alcohol and ether).
Adult Dosage.—As an antipyretic, gr. iv-x. As an antineuralgic, gr. xv-xx.
℞ Triphenin, gr. v, tabellæ vel capsulæ no. 5.
Sig.—One every two hours for five doses.
Uses.—Analgesic; hypnotic; antipyretic; milder than phenacetin.
Tritici Fluidextractum; Fl. ext. of Couch Grass.
Adult Dosage.—Min., ʒi; av., iiss; max., ʒi.
Method of Administration.—℞ Fluidextracti tritici, ʒii.
Sig.—Teaspoonful in a glassful of water, every three to four hours.
Uses.—Diuretic; urinary sedative.
Tritici Infusum; Couch Grass Infusion.
Adult Dosage.—Av., ʒii.
Method of Administration.—℞ Tritici, ʒi; aquæ, Oiss.
Boil down to a pint and filter.
Sig.—Two ounces, or a wineglassful, frequently until the whole pint is taken in twenty-four hours.
Uses.—Diuretic; urinary sedative.
Trituratio Elaterini (Elaterin 10, sugar of milk 90).
Adult Dosage.—Min., gr. ¼; av., ss; max., i.
Method of Administration.—℞ Triturationis elaterini, gr. ¼, tabellæ no. 6.
Sig.—Tablet two to three times a day.
Physiologic Action and Uses.—Hydragogue cathartic; acting upon both the large and small intestine.
Toxic Action.—Nausea, vomiting, prostration.
Trochisci Acidi Carbolici (gr. ¼) et mentholis (gr. ⅒).
Uses.—Throat antiseptic and anodyne.
Trochisci Acidi Tannici (gr. i).
Uses.—Throat astringent.
Trochisci Ammonii Chloridi (gr. iss).
Adult Dosage.—One to ten troches, t.i.d.
Uses.—Stimulating expectorant; cholagogue.
Trochisci Camphoræ et Mentholis.
Method of Administration.—A lozenge every two hours.
Uses.—Expectorant; diaphoretic; refrigerant anodyne.

Trochisci Catechu vel Gambir (nearly gr. i).

Uses.—Throat astringent, by virtue of the contained tannic acid.

Trochisci Formalini (gr. ⅛) made with "glycogelatin" or "fruit paste."

Uses.—Throat antiseptic.

Trochisci Gambir vel Catechu (nearly gr. i).

Uses.—Throat astringent (containing tannic acid).

Trochisci Guaiaci (gr. iii).

Method of Administration.—℞ Trochisci guaiaci (gr. iii), no. 12.

Sig.—One, every two to four hours.

Uses.—Expectorant; diaphoretic; alterative.

Trochisci Krameriæ (Ext. gr. i).

Uses.—Astringent.

Trochisci Potassii Chloratis (gr. iiss).

Adult Dosage.—One to three troches. Slowly dissolved in the mouth, t.i.d.

Uses.—Astringent; antisialogogue.

Tropon (vegetable and animal albumins).

Uses.—Concentrated albuminous food.

Trypanroth (a dye, formed by introducing H_2SO_4 radicles in the benzol ring of benzopurpurin; soluble in water).

Method of Administration.—Used by injection.

Uses.—Specific protozoal poison used in trypanosomiasis.

Trypsinum.

Adult Dosage.—Av., gr. ii+.

Method of Administration.—℞ Trypsini, gr. ii, capsulæ (hardened with formalin, grade ii) no. 30.

Sig.—One capsule, t.i.d.p.c.

Physiologic Action and Uses.—Proteolytic enzyme, acting best in a feebly alkaline medium, not exceeding one per cent. sod. bicarb., and at a temperature of 40° C. It is destroyed in the stomach.

Tuberculinum (Bazillenemulsion; B. E.; Human or Bovine: an emulsion of dead, powdered tubercle bacilli).

Adult Dosage.—Mg. $\frac{1}{100,000}$, initial dose, mixed with physiologic salt solution. See Tuberculosis, Pulmonary, Part 1.

Tuberculin may be obtained already serially diluted, from many pharmaceutical firms.

Tuberculinum (Denys; Bouillon Filtré: B. F.; Human or Bovine: simply a glycerin-broth culture of the tubercle bacillus, passed through a porcelain filter, and containing the soluble tubercle toxines; prepared like old tuberculin, without the prolonged heating and concentration).

Adult Dosage.—Mg. $\frac{1}{10,000}$, initial dose, diluted with distilled water. See Part 1, Tuberculosis, Pulmonary.

Tuberculinum (Dixon; a suspension in physiologic salt solution of dead tubercle bacilli, from which the fat has been removed by prolonged treatment with alcohol and ether).

Adult Dosage.—Mg. $\frac{1}{1000}$, standard therapeutic dose.

Tuberculinum (Old or Original, of Koch; O. T.; prepared from glycerine bouillon cultures of the tubercle bacillus by evaporation to one-tenth the original volume, sterilizing at 100 C. for an hour, and filtering through a Berkefeld filter; it is filtrate of soluble tubercle toxines).

Adult Dosage.—Mg. $\frac{1}{10,000}$, initial dose, diluted with distilled water. See Part 1, Tuberculosis, Pulmonary.

Tuberculinum (Rückstand; Rest; Residue; T. R.: an emulsion of dead bacilli freed from soluble toxines).

Adult Dosage.—Mg. $\frac{1}{10,000}$, initial dose, diluted with distilled water. See Part 1, Tuberculosis, Pulmonary.

Turpentine. See Terebinthina.

Unguentum Acidi Borici (boric acid 10, paraffin 10, white petrolatum 80).

Uses.—Antiseptic emollient and protective.

Unguentum Acidi Carbolici (phenol 3, white petrolatum 97).

Physiologic Action and Uses.—Antiseptic emollient.

Unguentum Acidi Salicylici.

Method of Administration.—℞ Acidi salicylici, gr. v–x–xxx–xlviii; petrolati et adipis lanæ hydrosi, aa ʒss.

Uses.—Antiseptic; parasiticide; keratolytic.

Unguentum Acidi Tannici (20 per cent. in glycerine and petrolatum).

Physiologic Action and Uses.—Astringent emollient; useful in the treatment of hemorrhoids.

Unguentum Aquæ Rosæ; Cold Cream (aqua rosæ fortior 19, expressed oil of almond 56, spermaceti 12½, white wax 12, sodium borate ½).

Uses.—Emollient.

Unguentum Belladonnæ (ext. belladonnæ 10, diluted alcohol 5, benzoated lard 65, lanolin 20).

Uses.—Local anodyne, etc. See Atropina.

Unguentum Bromocoll (20 per cent.; Bromocoll is a bromine compound with gelatin, containing about 20 per cent of bromine).

Uses.—Antipruritic. (Ortner.)

Unguentum Camphoræ (5 to 15 per cent.).

Uses.—Antipruritic.

Unguentum Capsici (made with spermaceti and olive-oil).

Uses.—Counter-irritant.

Unguentum Chrysarobini; see Chrysarobini Unguentum,

Unguentum Credé; see Argenti Colloidali Unguentum.

Unguentum Diachylon (lead plaster 50, olive oil or white petrolatum 49, oil of lavender flowers 1).

Uses.—Local antiseptic and astringent emollient.

Unguentum Epicarin; see Epicarin Unguentum.

Unguentum Gallæ (nut gall 20 per cent.).

Uses.—Astringent.

Unguentum Gallæ et Opii:

℞ Pulveris gallæ ʒiss; pulveris opii gr. xlviii; petrolati mollis ʒi.

Uses.—Astringent; anodyne.

Unguentum Hydrargyri; see Hydrargyri Unguentum.

Unguentum Hydrargyri Ammoniata; see Hydrargyri Ammoniati Unguentum.

Unguentum Hydrargyri Dilutum; Blue ointment (mercurial ointment 67, petrolatum 33).

Uses.—Antiluetic; antiseptic; parasiticide.

Unguentum Hydrargyri Nitratis. — See Citrine Ointment.

Unguentum Hydrargyri Nitratis Dilutum.

Unguentum Hydrargyri Oxidi Flavi; see Hydrargyri Oxidi Flavi, Unguentum.

Unguentum Ichthyoli (5 to 50 per cent.).

Uses.—Antiphlogistic; antiseptic.

Unguentum Iodi (iodin 4, pot. iodid 4, glycerine 12, benzoinated lard 80. Pulverize the iodine, then add a little alcohol, and finally the excipient by degrees). It should be prepared as required.

Uses.—Antiseptic and counter-irritant.

Unguentum Iodoformi (iodoform 10, lard 90).

Uses.—Antiseptic.

Unguentum Mentholis (5 to 15 per cent.).

Uses.—Antipruritic; refrigerant.

Unguentum Opii.

℞ Pulveris opii, gr. xlviii; Petrolati mollis, ʒi.

Uses.—Anodyne.

Unguentum Phenolis; Unguentum Acidi Carbolici (phenol 3, white petrolatum 97).

Uses.—Antiseptic emollient.

Unguentum Picis Liquidæ; pine tar 50, yellow wax 15, lard 35).

Method of Administration.—At first, strengths of 2 to 4 per cent. may be used and gradually increased.

Uses.—Stimulating antiseptic; antipruritic.

Unguentum Stramonii (ext. stramonii 10, diluted alcohol 5, benzoinated lard 65, lanolin 20).

Uses.—Anodyne.

Unguentum Sulphuris (washed sulphur 15, benzoinated lard 85).

Uses.—Antiseptic; parasiticide; keratolytic.

Unguentum Veratrinæ (veratrine 4, expressed oil of almond 6, benzoinated lard 90).

Physiologic Action and Uses.—Local antineuralgic application; dangerous if absorbed through an abrasion.

Unguentum Zinci Oxidi (zinc oxide 20, benzoinated lard 80).

Uses.—Antiseptic and protective emollient.

Unguentum Zinci Stearatis (zinc stearate 50, white petrolatum to 100).

Uses.—Antiseptic and protective emollient.

Urea Carbamide: $CO(NH_2)_2$ (soluble in 1 of water).

Adult Dosage.—Min., gr. x; av., xxx; max., lx.

℞ Ureæ, ℥iv (℥ss per dram); aquæ, q.s. ad ℥i.
M. Sig.—One teaspoonful t.i.d. with lots of water. It may be prescribed in cachets.

Uses.—Diuretic.

Ureæ Quinas; Urol.

Adult Dosage.—Min., gr. xxx; max., xl.

Method of Administration.—℞ Ureæ quinatis, gr. xxx, tabellæ no. 10.
Sig.—One, twice daily, with large amounts of water.

Uses.—Diuretic.

Urethane; Æthylis Carbamas: $NH_2.CO.O(C_2H_5)$ (soluble in 0.45 of water, and in 0.8 of alcohol).

Adult Dosage.—min., gr. x; av., xv; max., xxx.

Method of Administration.—In powder, cachets, or solution,—best gr. v, frequently repeated, as a full dose may cause vomiting. (Potter.)

Uses.—Very mild hypnotic; diuretic.

Urotropin; Hexamethylenamina: $(CH_2)_6N_4$ (soluble in 1.5 of water).

Dosage.—6 months, gr. ss; 18 months, gr. i; 3 years, gr. i–ii; 5 years, gr. ii–v. Adult, min., gr. v; av., x; max., xv.

Method of Administration.—℞ Hexamethylenaminæ, gr. v–x, pulveres, tabellæ, vel capsulæ, no. 24.
Sig.—A powder in solution in water, t.i.d. It may be given up to ℥i daily, for adults. If sodium acid phosphate is given to render the urine acid, hexamethylenamine should not be taken for several hours later.

Physiologic Action and Uses.—Urinary antiseptic; liberates formaldehyde only in an acid medium (not otherwise).

Toxic Action.—Indigestion, abdominal pain, diarrhœa, strangury, albuminuria, hæmaturia, hæmoglobinuria, headache, tinnitus, measly rash.

Uvæ Ursi Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., ℥i.

Method of Administration.—℞ Fluidextracti uvæ ursi, ℥i.
Sig.—Half a teaspoonful with plenty of water, three to four times daily.

Physiologic Action and Uses.—Diuretic; urinary antiseptic and sedative; contains the glucoside arbutin, which is split up in the kidney into sugar and the antiseptic hydrochinone.

Toxic Action.—Vomiting, purging.

Uvæ Ursi Infusum (℥i in Oi).

Adult Dosage.—Min., ℥i; max., ii.

Method of Administration.—℞ Infusi uvæ ursi, ℥viii.
Sig.—Two tablespoonfuls, three to four times daily.

Physiologic Action and Uses.—Slightly antiseptic diuretic; contains the glucoside arbutin, which is split up in the kidney into sugar and the antiseptic hydrochinone.

Vaccinum, Acne.

Adult Dosage.—Five to ten+ millions, hypodermically every ten days, when the comedo predominates; staphylococcus vaccine, beginning with about 200 millions when there is much pustulation.

Vaccines or bacterins are suspensions of killed bacteria in physiological salt solution, usually with the addition of cresol or trikresol, 0.4 per cent., or phenol 0.5 per cent., as a preservative. They are used for the purpose of producing active immunity. Autogenous vaccines are prepared from cultures obtained from the patient to be treated; whereas stock vaccines are obtained from other sources, and are therefore probably less effective. The severer the disease, the smaller the dose, and the shorter the intervals. In mild affections a systemic reaction may be desirable. The use of vaccines is obviously contraindicated in bacteræmia. A sensitized vaccine (serobacterin) is one in which the organism has been brought in contact with its specific anti-body by treatment with the serum of an animal which has been immunized to some extent against the organism, the anti-body combining with the organism. A forty-eight hour culture of the organism is suspended in physiologic salt solution (0.85 per cent.) and the resulting emulsion superimposed in a tube upon the immune serum. The two layers of fluid do not unite, but after a short incubation at 37°C., the organisms become agglutinated and fall to the bottom of the tube. The supernatant liquid is decanted, the microbial sediment washed several times by careful centrifugation in physiologic salt solution, and the sensitized bacteria are then suspended in a sufficient amount of salt solution to give the mixture the appearance of a twenty-four-hour typhoid culture (60 to 80 millions of bacteria per millilitre). The preparation is then heated to 56° C. three times during one hour. The first dose is one millilitre hypodermically, followed after five days by two millilitres, which may be repeated, if desired, three, four, or five times. (Bazy and Cuvillier.) "This treatment, it is claimed, sensitizes the bacteria so that they are more easily attacked by the protective forces of the patient, cause less reaction (they are one-fourth to one-fifth as toxic), and produce a quicker immunity." "It is held that a time-consuming portion of the process of immunity, namely, the formation of specific amboceptors necessary for the breaking up of the bacteria, is dispensed with." "These amboceptors, procured from the immunized goat or horse and combined with the bacteria, it is believed, prepare the bacteria in the same manner as amboceptors formed in the body of the patient; their action, therefore, is much more rapid than that of the ordinary bacterial vaccine." (From *New and Non-Official Remedies.*) I do not see how such an emasculated bacterin can bring about active immunity. On administration, a sensitized vaccine does not produce the so-called "negative phase" so that larger doses may be used than with non-sensitized vaccines.

Vaccines have not proven of great curative value in most cases, and they may do harm. Their prophylactic value in certain cases is established.

Vaccinum Antirabicum (the virus of rabies, the virulence of which is greatly attenuated by passage through a long series of rabbits, drying—*i.e.* the spinal cords of the infected rabbits—and preservation in glycerine).

Method of Administration.—For use, the spinal

cord is emulsified in physiological saline solution, and injected, subcutaneously, into the anterior abdominal wall,—one injection daily for twenty-one to twenty-five days. Immunity may thus be established before the incubation period of the disease has terminated. A dose may be procured each day by mail from the following manufacturers: H. M. Alexander and Co., Marietta, Pa.; W. T. McDougall, Kansas City, Kans.; Schieffelin and Co., New York; H. K. Mulford Co., Phila.; E. R. Squibb and Sons, New York; Pasteur Institute of St. Louis; and Eli Lilly and Co., N. Y., Chicago, St. Louis, Kansas City, New Orleans, or Indianapolis.

Vaccinum, Cholera.

Adult Dosage.—500 million, first injection; second, five to six days later, 1000 million, and later another injection of 1000 million: for prophylactic purposes.

Vaccinum, Colon Bacillus.

Adult Dosage.—10 to 100+million; one may begin with five million, and increase by five million every three days, up to 50 to 100 million, if necessary.

Vaccinum Diphthericum.

Adult Dosage.—100 to 800 million; used to eliminate the bacilli in carriers.

Vaccinum Erysipelatum et Prodigiosum; Erysipelas and Prodigiosus Toxins (Coley).

Adult Dosage.—Min., ♏i; max., viii; hypodermically partly in or near the tumor, and partly at a distance. "A reaction consisting of chill and rise of temperature is expected to follow the injections until tolerance becomes established." Used in inoperable sarcoma, in which 10 per cent. of cures is reported. *New and Non-Official Remedies.*

Vaccinum, Friedländer Bacillus Pneumoniæ.

Adult Dosage.—50 to 400 million, in serial doses.

Vaccinum Gonococcum.

Adult Dosage.—10 to 50 to 500 million; every four to five days, beginning with small doses.

Vaccinum, Malta Fever.

Adult Dosage.—1000 million, repeated in a week.

Vaccinum Meningococcum.

Adult Dosage.—500 million; followed in ten days by 1000 million, and, after another interval of ten days, by 1000 million; as a protective.

Vaccinum Paratyphosum A et B.

Adult Dosage—125 million of each, followed by the same or double the dose a week later.

Vaccinum, Pertussis Bacillus.

Adult Dosage.—25 to 800 million; in serial doses.

Vaccinum Plague Bacillus.

Adult Dosage.—250 to 1000 to 5000 million; in two doses, five to six days apart, for prophylactic purposes. A relative immunity is produced, lasting about four months.

Vaccinum Pneumococcum.

Adult Dosage.—10 to 100 to 500 million; in serial doses.

Vaccinum Pollen or Multipollen. See Hay-Fever.

Vaccinum Pyocyaneum.

Adult Dosage.—25 to 1000 million; in serial doses.

Vaccinum Staphylococcum (made from the staphylococcus pyogenes aureus, albus, or citreous, or all three).

Adult Dosage.—50 to 400 to 1000 milion; in serial doses, every three to four days.

Vaccinum Streptococcum (made from different strains of streptococcus pyogenes).

Dosage.—5 to 100 to 500 to 1000 million; in serial doses, every four days.

Vaccinum Typhosum (made from Bacillus typhosus, to which is sometimes added Bacillus paratyphosus, A and B).

Adult Dosage.—500 million; followed, in seven to ten days, by 1000 million, and the latter dose repeated after another seven to ten days; as a prophylactic. Immunity probably lasts about two to four years or longer. Vaccine may also be useful in eliminating bacilli in carriers. (See also Typhoid Fever in Part 1.)

Virus Vaccinicum; Vaccine Virus (obtained from the vesicles of calves with vaccinia).

For instructions and other information, see Smallpox, Part 1.

Uses.—Prophylactic against smallpox.

Valeras Ammonii: $NH_4C_5H_9O_2$ (soluble in 0.3 of water and 0.6 of alcohol).

Adult Dosage.—Min., gr. i; av., viiss; max., x.

Method of Administration.—℞ Ammonii valeratis, ʒii ℈ii; aquæ, ʒii.

M. Sig.—ʒi, t.i.d., or every two to four hours.

Uses.—Nerve sedative.

Valeras Mentholis; Validol: $CH_3.CH_2.CH_2.COO.C_{10}H_{19}$.

Adult Dosage.—Min., ♏x; av., xv; max., xx.

Method of Administration.—℞ Mentholis valeratis, ʒii.

Sig.—Ten to twenty drops on sugar, or in a little sweet wine or coffee, every four hours, or once to thrice daily.

Uses.—Gastric sedative.

Valeras Zinci (soluble in 70 of water and 22 of alcohol).

Adult Dosage.—Min., gr. ¼; av., ii; max., iv.

Method of Administration.—℞ Zinci valeratis, gr. ii, capsulæ no. 30.

Sig.—One, t.i.d., It may be given up to gr. xxx, t.i.d., in diabetes insipidus.

Uses.—Nerve sedative; central nervous depressant (?).

Valerianæ Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti valerianæ, ʒi.

Sig.—Thirty drops in water, every two to four hours.

Uses.—Nerve sedative; central nervous depressant (?).

Toxic Action.—Hiccough, nausea, vomiting, diarrhœa, frequent urination, mental disturbance, diminished reflexes, lowered blood-pressure, slow heart, melancholia after prolonged use.

Valerianæ Pulvis.

Adult Dosage.—Min., gr. x; av., xxx; max., xlv.

Method of Administration.—℞ Pulveris valerianæ, gr. 5, capsulæ no. 6.

Sig.—One, t.i.d., the dose to be gradually increased to gr. xl, t.i.d., in diabetes insipidus.

Uses.—Nerve sedative; central nervous depressant (?).

Valerianæ Tinctura (20 per cent.).

Adult Dosage.—Min., ʒss; av., i; max., ii.

Method of Administration.—℞ Tincturæ valerianæ, ʒii.

Sig.—Teaspoonful in water, t.i.d., increased, in diabetes insipidus, even up to ʒss, or a tablespoonful four times a day.

Uses.—Nerve sedative; central nervous depressant (?).

Valerianæ Tinctura Ammoniata (Valerian 20, arom. spt. ammonia to 100).

Adult Dosage.—Min., ♏v; av., xxx; max., xlv.

Method of Administration.—℞ Tincturæ valerianæ ammoniatæ, ʒii.

Sig.—Half to one teaspoonful, well diluted in water, every two to three hours.

Uses.—Antispasmodic; gentle stimulant.

Validol; Mentholis Valeras: $CH_3.CH_2.CH_2.COO.C_{10}H_{19}$.

Adult Dosage.—Min., ♏x; av., xv; max., xx.

Method of Administration.—℞ Mentholis valeratis, ʒii.

Sig.—Ten to twenty drops on sugar, or in a little sweet wine or coffee, every four hours, or once to thrice daily.

Uses.—Gastric sedative.

Vaseline; Paraffinum vel Petrolatum Molle (white vaseline is soft paraffin which has been filtered through animal charcoal).

Uses.—Base for ointments; protective emollient.

Vaselin Liquid; Petrolatum Liquidum; Paraffinum Liquidum Purificatum; Mineral Oil.

Adult Dosage.—Min., ʒss; max., iii.

Method of Administration.—℞ Paraffini liquidi purificati, ʒviii.

Sig.—Half to three ounces a day, in a single dose at bed time, or in divided doses; or two teaspoonfuls to two tablespoonfuls, one-half hour before meals, two to three times a day.

Uses.—Laxative emollient; vehicle.

Vasotonin; Yohimbin Urethane (Urethane is Æthylis Carbamas: $NH_2.CO.O(C_2H_5)$).

Method of Administration.—Subcutaneously, every day, or every other day.

Physiologic Action and Uses.—Used in arterial hypertension because of its peripheral vaso-dilator action.

Veratri Fluidextractum.

Adult Dosage.—Min., ♏i; av., iss; max., iv.

Method of Administration.—℞ Fluidextracti veratri, ʒi.

Sig.—One to two drops in water, as required.

Physiologic Action and Uses.—Cardiac and nervous sedative in fevers; increases excitability of voluntary muscle with the occurrence of contracture or slow relaxation following stimulation; exerts same action on heart muscle, causing slowing; may also stimulate vagus centre; antipyretic by action on heat-regulating centre; lowers blood-pressure.

Toxic Action.—Small, rapid pulse, dyspnœa, giddiness, impaired vision, vomiting, purging, great weakness, stupor, collapse, convulsions.

Veratrina (mixture of alkaloids; slightly soluble in water, soluble in 3 of alcohol, 96 of glycerine, 56 of olive oil).

Adult Dosage.—Min., gr. 1/50; av. 1/30, max., 1/10.

Physiologic Action and Uses.—Cardiac sedative in fevers, but a dangerous poison.

Veratrinæ Unguentum (veratrine 4, expressed oil of almond 6, benzoinated lard 90).

Physiologic Action and Uses.—Local antineuralgic application; dangerous if absorbed through an abrasion.

Veratri Tinctura (10 per cent.).

Adult Dosage.—Min., ♏viii; av., xv; max., xxx.

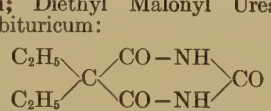
Method of Administration.—For eclampsia (Edgar): 10 to 20 minims, subcutaneously, then 10 minims every half hour, "till the pulse continues below 60 to the minute."

Physiologic Action and Uses.—See Veratri, Fluidextractum (above).

Veronal Sodium; Sodii Diæthyl-Barbituras; Medinal (soluble in 5 of water). See Veronalum.

Adult Dosage.—Min., gr. v; max., x.

Veronalum; Diethyl Malonyl Urea; Acidum Diæthyl-Barbituricum:



(soluble in about 150 of cold water, about 12 of boiling water; soluble in 8 of alcohol).

Adult Dosage.—Min., gr. v; av., x; max., xv.

Method of Administration.—℞ Veronali, gr. v, pulveres, tabellæ, vel capsulæ, no. 6.

Sig.—One, one and a half to two hours before bedtime, followed by a cupful of hot water, tea, or milk. Keep the bowels active with salines, and give alkalies, on prolonged use of the drug.

Physiologic Action and Uses.—Hypnotic; gr. viii have been fatal; relatively safe in small doses; begins to act in about half an hour.

Toxic Action.—Abdominal pain, sweating, pyrexia, erythema, neuralgia, nausea, vomiting, oliguria, glycosuria, ataxia, somnolence deepening to coma, trembling and restlessness during the sleep, fall of temperature.

Viburni Prunifolii Extractum.

Adult Dosage.—Av., gr. viii.

Uses.—Uterine sedative.

Viburni Prunifolii Fluidextractum.

Adult Dosage.—Min., ♏x; av., xxx; max., xlv.

Method of Administration.—℞ Fluidextracti viburni prunifolii, ʒi.

Sig.—Thirty drops in water, three to four times a day.

Uses.—Uterine sedative.

Vichy Salt, Artificial; Sal Vichyanum Factitium, N. F. (pot. carb. 3.85, mag. sulphate 8, sod. chloride 7.7, sod. bicarb. 84.6).

Adult Dosage.—Av., ʒi.

Method of Administration.—In a tumblerful of water, one hour before meals.

Uses.—Alkaline saline cathartic.

Vichy Salt Effervescent, Artificial; Sal Vichyanum Factitium Effervescens N. F. (Artificial Vichy salt 25, sod. bicarb, 48.5, tartaric acid 16.45, citric acid to 100).

Adult Dosage.—Av., ʒi.

Method of Administration.—In a tumblerful of water, one hour before meals.

Uses.—Alkaline saline cathartic.

Vinsip.

Vinum Album; white wine (alcohol 7 to 12 per cent. by weight).

Adult Dosage.—Min., ʒi; max., iv.

Includes California Riesling, Ohio Catawba, etc., made by fermenting grape juice, freed from seeds, stems, and skins.

Uses.—Alcoholic stimulant and sedative.

Vinum Antimonii (about 2 grs. of tartar emetic to the ounce; soluble in 12 of water).

Adult Dosage.—Min., ♏v; av., xv; max., xx.

Method of Administration.—Employ doses of three minims as an expectorant.

Vinum Colchici Seminis.—See Colchici Seminis, Vinum.

Vinum Ferri Amarum.—See Ferri Vinum Amarum.

Vinum Ferri Citratis.—See under Ferri et Ammonii Citras.

Vinum Ipecacuanhæ. See Ipecacuanhæ, Vinum.

Vinum Rubrum; Red Wine (alcohol 7 to 12 per cent. by weight).

Adult Dosage.—Min., ʒi; max., iv. Includes native claret, burgundy, etc., made by fermenting the juice of colored grapes with their skins.

Uses.—Alcoholic stimulant, sedative, and astringent.

Vinum Xericum; Sherry Wine (alcohol 20 to 35 per cent.).

Dosage.—18 months, gtt. xxx; 3 years, gtt. xlv-ʒi; 5 years ʒi–ii. Adult, min., ʒi; max. ii.

Method of Administration.—Every one to four hours, diluted with water; no more than 1 to 2 ounces in twenty-four hours to a child of one year or less, 6 to 8 ounces to a child of five years, 20 ounces to an adult.

Uses.—Alcoholic stimulant and sedative.

Vleminckx's Solution; Liquor Calcis Sulphuratæ.

Method of Administration.—℞ Calcis, ℥ss; sulphuris præcipitati, ℥i; aquæ destillatæ, ℥x.

M. Boil down to six ounces, and filter.

Sig.—Dilute at first with about ten parts of water, and bathe the parts for five to ten minutes. Increase the strength gradually every few nights, with the object of producing some irritation.

Uses.—Stimulating lotion; depilatory.

Waters, Cereal. See Cereal Waters.

Waters, Mineral. See Mineral Waters.

Wax, White; Cera Alba (yellow beeswax bleached; soluble in oils).

Wax, Yellow; Cera Flava (beeswax; soluble in oils).

Uses.—Gives consistence to cerates and ointments.

Whiskey; Spiritus Frumenti (37 to 47.5 per cent. of alcohol by weight).

Dosage.—6 months, gtt. v–x; 18 months, gtt. x–xx; 3 years, gtt. xx–xxx; 5 years, gtt. xxx–xl. Adult, min., ℥ii; av., ℥ii; max., iv.

Method of Administration.—Every one to four hours, diluted six to ten times with water; no more than ½ to 1 ounce in twenty-four hours to a child of one year or less; 3 to 4 ounces to a child of five years, 10 ounces to an adult.

Physiologic Action and Uses.—General stimulant in its initial effect; followed by sedation and eventually narcosis; diaphoretic, dilating the cutaneous vessels; antipyretic; diuretic; removes inhibition; produces euphoria by blunting the feelings of discomfort; stomachic; antiseptic; local rubefacient.

Wild Cherry Syrup; Syrupus Pruni Virginianæ (contains HCN).

Dosage.—3 years, ℥ss; 5 years, ℥i. Adult, min., ℥ss; av., i; max., iss.

Uses.—Bronchial sedative; flavor and vehicle.

Toxic Action.—Cardiac depression.

Wine. See Vinum.

Wintergreen, Oil of. See Gaultheriæ, Oleum.

Witch-Hazel. See Hamamelis.

Wright's Hypertonic Solution (sodium chloride 5, sod. citrate 0.5 to 1, water to 100). The citrate is added to prevent coagulation of lymph.

Uses.—Purpose: to produce a "lymph lavage" of infected wounds by osmosis.

Yeast; Brewers' Yeast, Fresh.

Method of Administration.—Four to five wineglassfuls a day, or a teaspoonful to a tablespoonful, t.i.d.a.c.

Uses.—For furunculosis; used also to ferment milk.

Yeast Cake; Compressed Yeast; Cerevisiæ Fermentum Compressum.

Method of Administration.—One-half teaspoonful daily to a child of two to three years. (Holt.)

Uses.—For furunculosis; used also to ferment milk.

Yerba Santa; Eriodictyon.

Adult Dosage.—Min., gr. v; av., xv; max., xxx.

Physiologic Action and Uses.—Expectorant; combined with glycyrrhiza to disguise the taste of quinine.

Yerba Santa, Fluid extract; Fluidextractum Eriodictyi.

Adult Dosage.—Min., ♏v; av., xv; max., xxx.

Physiologic Action and Uses.—Expectorant; combined with glycyrrhiza to disguise the taste of quinine.

Yerbazine (preparation of Yerba Santa, made by Lilly and Co.).

Uses.—Menstruum for quinine.

Yohimbina (alkaloid; keep in an amber-colored bottle in a dark place).

Adult Dosage.—Min., gr. 1/10; max., ⅛.

Method of Administration.—℞ Yohimbinæ solutionis, 2 per cent., ℥ss.

Sig.—♏v–viii, gradually increased to ♏xvi. (Potter.)

Physiologic Action and Uses.—Aphrodisiac; produces vasodilatation in the external genitalia by direct action on the vessel walls, and also augments the reflex excitability of the centres of erection in the cord; local anæsthetic.

Yohimbin-Urethane; Vasotonin (Urethane is Æthylis Carbamas: $NH_2.CO.O(C_2H_5)$.

Method of Administration.—Subcutaneously, every day or every other day.

Physiologic Action and Uses.—Used in arterial hypertension because of its peripheral vasodilator action.

Zeæ Fluidextractum (Corn Silk).

Adult Dosage.—Min., ℥ss; av., i; max., ii.

Method of Administration.—℞ Fluidextracti zeæ, ℥ii.

Sig.—One-half to one teaspoonful, with lots of water, every three to four hours.

Uses.—Diuretic; urinary sedative.

Zinci Acetas: $CH_3COO\diagdown\diagup Zn + 2H_2O$ $CH_3COO\diagup\diagdown$

(soluble in 2.3 of water and in 30 of alcohol).

Adult Dosage.—Min., gr. ss; av., ii; max., iii.

Method of Administration.—Collyrium: gr. ss–ii, ad ℥i.

Uses.—Astringent; antiseptic.

Toxic Action.—Gastro-enteritis.

Zinci Bromo-Valeras.

Adult Dosage.—Min., gr. i; max., iii.

Uses.—Nerve sedative.

Zinci Carbonas Præcipitatus: $ZnCO_3$ (insoluble in water or alcohol).

Uses.—Local protective.

Zinci Chloridum: $ZnCl_2$ (soluble in 0.25 of water and in 1.3 of alcohol).

Method of Administration.—Collyrium: gr. i–ii, ad ℥i.

Throat astringent lotion: gr. x–xx ad ℥i.

Uses.—Antiseptic; astringent; caustic.

Toxic Action.—Gastro-enteritis.

Zinci Iodidum: ZnI_2 (very soluble in water and in alcohol).

Adult Dosage.—Min., gr. ss; av., i; max., ii; in syrup.

Zinci Oxidi Unguentum (Zn. ox. 20, benzoinated lard 80).

Uses.—Protective, sedative emollient.

Zinci Oxidum: ZnO (insoluble in water or alcohol).

Dosage.—5 years, gr. i–ii–v. Adult, min., gr. v; max., x.

Method of Administration.—In pill, t.i.d., in epilepsy, to obviate impairment of memory.

As a dusting powder: 5 to 10 per cent., with starch or talcum.

Uses.—Protective, antiseptic, astringent, and anhidrotic dusting powder.

Toxic Action.—Vomiting.

Zinci Peroxidum (ZnO_2, at least 45 per cent. with ZnO; practically insoluble in water, but gradually decomposed by it into hydrogen peroxide and zinc hydroxide, the latter further decomposing the former with the liberation of oxygen). It may be sterilized by heat, being stable at 150° C.

Method of Use.—As a dusting powder, either alone or mixed with tannin.

As an ointment,—10 per cent.,

Uses.—Antiseptic; astringent.

Zinci Phenolsulphonas; Zinci Sulphocarbolas (soluble in 1.6 of water and in 1.8 of alcohol).

Adult Dosage.—Min., gr. i; av., ii; max., v.

Method of Administration.—℞ Zinci phenolsulphonatis, gr. xlviii (gr. iii per dram); aquæ, ℥ii.

M. Sig.—One dram in water, three to four times daily.

Uses.—Local and internal antiseptic and astringent.

Zinci Phosphidum.

Adult Dosage.—Min., gr. 1/20; max., 1/12.

Method of Administration.—℞ Zinci phosphidi, gr. 1/8, pilulæ no. 30.

Sig.—One pill, t.i.d.

Physiologic Action and Uses.—Alterative. See Phosphorus.

Zinci Stearas (practically insoluble in water and alcohol).

Uses.—Astringent dressing powder and vehicle.

Zinci Stearatis Unguentum (zn. stearate 50, white petrolatum to 100).

Uses.—Protective emollient.

Zinci Sulphas: $ZnSO_4+7H_2O$ (soluble in 0.6 of water; practically insoluble in alcohol).

Adult Dosage.—Min., gr. x; av., xv; max., xxx.

Method of Administration.—In aqueous solution, as an emetic, repeated in fifteen minutes, if necessary.

As an astringent solution for the eye: gr. i–iii-v, ad ℥i.

As an astringent throat lotion: gr. x-xx, ad ℥i.

As a urethral astringent: gr. iiss–xix, ad ℥i.

Physiologic Action and Uses.—Astringent; styptic; caustic; emetic; acting reflexly upon the gastric mucous membrane; not very poisonous.

Toxic Action.—Gastro-enteritis.

Zinci Sulphocarbolas.—See Zinci Phenolsulphonas, above.

Zinci Valeras (soluble in 70 of water and in 22 of alcohol).

Adult Dosage.—Min., gr. 1/4; av., ii; max., iv.

Method of Administration.—℞ Zinci valeratis, gr. ii, capsulæ no. 30.

Sig.—One, t.i.d. It may be given up to gr. xxx t.i.d., in diabetes insipidus.

Uses.—Nerve sedative; central nervous depressant (?).

Zingiberis Fluidextractum; Fl. ext. of Ginger.

Adult Dosage.—Min., ♏x; av., xv; max., xxx.

Method of Administration.—℞ Fluidextracti zingiberis, ℥ss.

Sig.—Fifteen drops in hot water, every two hours.

Uses.—Carminative; stimulant; flavor.

Toxic Action.—Gastro-intestinal irritation.

Zingiberis Syrupus; Syrup of Ginger (fl. ext. ginger 3, alcohol 2, syrup to 100).

Adult Dosage.—Min., ℥i; av., iv; max., ℥i.

Uses.—Flavor; carminative.

Zingiberis Tinctura; Tincture of Jamaica Ginger (20 per cent.).

Adult Dosage.—Min., ♏x; av., xxx; max., ℥i.

Uses.—Flavor; carminative; stimulant.

Zoolak; Matzoon: Boil thoroughly 11¼ quarts of milk and remove all the cream from the top. While the milk is still quite warm, add and mix thoroughly a bottle of prepared bottled Zoolak; place quickly in pint bottles, not entirely full; cork tightly at once, and keep in a warm place until the liquid appears creamy through the bottles. Then keep in a cold place.

PHARMACOLOGIC INDEX

Absorbents (L. *ab* from + *sor'bere* to suck).—Wood charcoal; Kaolin

Acidifiers, Urinary.—See Urinary Acidifiers.

Alkalinizers, Blood.—See Blood Alkalinizers.

Alteratives (L. *altera're* to change).—Iodine, *e.g.*, tr. iodi, the iodides, Lugol's sol., sajodin, dilute hydriodic acid, syrup of hydriodic acid, iodipin, iodoform, iodol; arsenic, *e.g.*—Fowler's sol., salvarsan, neo-salvarsan, sod. cacodylate, Donovan's sol.; mercury, *e.g.*—the protiodide, biniodide, oleate, etc.; sulphur; ichthyol, ichthalbin; phosphorus, dilute phosphoric acid, hypophosphites, glycerophosphates, lactophosphates; gold chloride, gold and sodium chloride; calcium, *e.g.*—calc. chloride, calc. lactate, calc. glycerophosphate, calc. hypophosphite, calc. sulphide, syrup of calc. lactophosphate, elixir of calc. and sod. glycerophosphate; glandular preparations, *e.g.*—thyroid, parathyroid, adrenal, ovarian, corpus luteum or lutein, pituitary, thymus, iodothyrin; antithyroidin; yeast and yeast preparations, *e.g.*—furunculin (yeast powder), ceredin or cerolin (yeast fats); iron, *e.g.*—syrup of the iodide, elixir of iron, quinine, and strychnine phosphate, etc.; cod-liver oil; creosote; guaiacum, guaiacol; thiosinamin, fibrolysin.

Amœbicides (Gr. *ἀμοιβή* change + L. *cœ'dere* to kill).—Ipecac; emetin hydrochloride; emetine bismuth iodide.

Anæsthetics, General (Gr. *ἀν* not + *αἴσθησις* sensation).—Ether; chloroform; nitrous oxide; ethyl chloride.

Anæsthetics, Local.—Cocaine, novocaine, eucaine, holocaine; alypin; acoin; quinine and urea hydrochloride; anesthesin; orthoform; chloretone; guaiacol; ethyl chloride; ethyl iodide; ether; menthol; oil of clove; carbolic acid; yohimbin; aconite; antipyrine.

Analgesics, General (Gr. *ἀν* neg. + *ἄλγος* pain).—Opium, laudanum, paregoric, Dover's powder, morphine, codeine, dionin, Schlesinger's analgesic solution, cannabis indica, hyoscyamus, hyoscin, hyoscyamine hydrobromide, gelsemium, aconite, chloral, butyl chloral hydrate, hypnal, acetanilid, comp. acetanilid powder, exalgin, antipyrin, salipyrin, phenacetin, salophen, phenocoll, triphenin, lactophenin, pyramidon, salicylic acid, sod. salicylate, methyl salicylate, aspirin, novaspirin, sod. bicarbonate, caffeine, guarana, elixir guaranæ et celerinæ, ether, spt. of ether, comp. spt. of ether, alcohol, quinine, colchicum, cimicifuga, chloroform.

Analgesics, Local.—Sod. bicarb., iodoform, acetanilid, dionin, menthol, camphor, camphor-chloral, spt. of camphor, ichthyol, oil of peppermint, oil of wintergreen, chloroform, chloroform liniment, comp. chloroform liniment, aconite, ammonia water, Fuller's lotion, lead and opium wash, picric acid, belladonna liniment, plaster, and ointment, ung. stramonii, ung. veratrinæ, ung. gallæ et opii, and the drugs enumerated under Anæsthetics, Local, and Antipruritics.

Anaphrodisiacs (Gr. *ἀν* neg. + *ἀφροδισία* venery).—Bromides, bromoform, monobromated camphor. (See also Priapism, in Part 3.)

Anhidrotics (Gr. *ἀν* priv. + *ἱδρώς* sweat).—Atropine, belladonna, duboisine, eumydrin, muscarine, picrotoxin, agaricinic acid, sod. agaracinate, camphoric acid, guaiacamphol, sod. or potass. tellurate, sage, zinc oxide. Local anhidrotics are formalin, tannoform. (See also Hyperidrosis, General and Local, in Part 5.)

Anodynes, General (Gr. *ἀν* neg. + *ὀδύνη* pain).—See Analgesics, General.

Anodynes, Local.—See Analgesics, Local.

Antacids, Gastro-Intestinal, Etc. (L. *an'ti* against + *a'cidus* sour).—Sod. bicarbonate, sod. carbonate, sod. biborate, sod. hydroxide, potass. hydroxide, liq. sod. or pot. hydroxide, soda-mint, ammonia water, mist. rhei et sodæ, milk of magnesia, mag. carbonate, mag. oxide, lime-water, precipitated chalk, prepared chalk, comp. chalk powder, lithium bicarbonate, carbonate, citrate, and effervescent citrate. (See also Hyperacidity, in Part 1.)

Antacids, Urinary.—See Urinary Antacids.

Anthelmintics (Gr. *ἀντί* against + *ἕλμινς* worm).—Aspidium, chenopodium, santonin, pepo or pumpkin seed, pomegranate, thymol, myrtol, chloroform, beta-naphthol, salol, calomel, tansy, spigelia, turpentine, pelletierine, garlic, asafœtida, quassia, benzine, acetic acid.

Antifermentatives (L. *an'ti* against + *fermen'tum* leaven).—Resorcin, hydrochloric acid, sulphurous acid, sod. hyposulphite, bacillus Bulgaricus (intest. antiferment.), koumiss (intest. antiferment.).

Antileprosy.—Mag. or sod. gynocardate; bals. gurjunæ; chaulmoogra oil; hoang-nan; leprolin.

Antilithics (Gr. *ἀντι* against + *λίθος* stone).—Uric Acid and Urate Solvents: Mag. borocitrate, potass. tartraborate, ammon. hippurate, precipitated chalk, piperazin, citarin. Stimulators of Uric Acid Excretion: Colchicum, atophan, citarin, sod. salicylate. (See also Nephrolithiasis and Gout, in Part 1.)

Antiluetics.—Mercury, *e.g.*, mercurial ointment, blue ointment, mercury vasogen, oleate of mercury, gray oil, blue mass, gray powder, calomel, mercury succinimid, tannate, bichloride, protiodide, biniodide, cyanide, oxycyanide, salicylate; arsenic, *e.g.*, salvarsan, neosalvarsan; iodides, sajodin.

Antimalarial.—Quinine, euquinine, aristoquin, arsenic, methylene blue.

Antineuralgics (Gr. *ἀντί* against + *νεῦρον* nerve + *ἄλγος* pain).—See Analgesics.

Antiparasitics.—See Parasiticides.

Antiphlogistics (Gr. *ἀντί* against + *φλόγωσος* inflammation, from *φλόξ* flame).—Antiphlogistin, cataplasma kaolini, ichthyol, ichthyol ointment.

Antipruritics (L. *an'ti* against + *pruri're* to itch).—Carbolic acid, sod. bicarbonate, borax, lime-water, ammonia water, cherry-laurel water, calamine lotion, calamine liniment, menthol, camphor, camphor-chloral, camphor ointment, menthol ointment, tar ointment, bromocoll ointment, thigenol, and the drugs enumerated under Analgesics, Local. (See also Pruritus, in Part 5.)

Antipyretics (Gr. *ἀντί* against + *πῦρ* fire).—Acetanelid, antipyrin, phenacetine, salipyrin, salophen, triphenin, lactophenin, phenocoll, pyramidon, salicylic acid, sod., methyl and phenyl salicylate, aspirin, quinine, resorcin, phenol, guaiacol, alcohol, thallin sulphate, veratrum viride, aconite, liq. ammonii acetatis, citric acid, dilute phosphoric acid, dilute acetic acid, potassium acetate, citrate, bicarbonate, bitartrate, and nitrate, water. (See also Fever, in Part 1.)

Antirheumatics.—Salicylic acid, sod. salicylate, salol, oil of wintergreen, salicin, salophen, salipyrin, aspirin, novaspirin.

Antiseptics, Biliary (Gr. *ἀντί* against + *σήψις* putrefaction).—Sodium salicylate, helmitol.

Antiseptics, Blood.—See Blood Antiseptics.

Antiseptics, Broncho-Pulmonary.—See Broncho-Pulmonary Antiseptics.

Antiseptics, Gastric.—See Antifermentatives.

Antiseptics, Intestinal.—See Intestinal Antiseptics.

Antiseptics, Local.—(a) Aqueous Solutions: Loeffler's sol., calamine lotion, calamine liniment, black wash, Mandl's sol., lysol, hydrogen peroxide, perhydrol, sulphocarbolate of sod. or zinc, potass. permanganate, argyrol, protargol, silver nitrate, acriflavin, mercurochrome, pyoktanin, resorcin, zinc chloride, zinc sulphate, zinc acetate, benzoic acid, boric acid, carbolic acid, dilute hydrochloric acid, picric acid, acoin, alcohol, garlic, liq. alumin. acet., alumnol, ichthyol, liq. antisepticus, liq. antisepticus alkalinus, mercury bichloride, borax, Burow's sol., calcium permanganate, chloride of lime, chloretone, chlorine water, chloroform water, cinnamon water, creolin, cresol, liq. cresol. comp., copper salts, Dakin's solution, Dobell's sol., optochin, guaiacol, merc. cyanide, oxycyanide of mercury, merc. salicylate, sod. hyposulphite, iodine trichloride, liq. carbonis detergens, liq. picis alkalinus, liq. picis carbonis, infus. picis liquidæ, liq. sodæ chlorinatæ.

(b) Fluids, Pastes and Oils: Lysol, creolin, cresol, liq. cresol. comp., naphthol-camphor, oil of clove, oil of tar, oil of turpentine, sanitas oil, carbolic acid, glyceritum acidi carbolici, lactic acid, acetic acid, alcohol, ichthyol, balsam of Peru, boroglyceride, carbolated iodine, chloroform, dichloramin-T, eucalyptus, gomenol oil, guaiacol, iodol; B. I. I. P. or Morrison's paste, Beck's bismuth paste, tr. of myrrh, tr. of iodine, the volatile oils (oil of peppermint, anise, etc.).

(c) Powders and Solids: Iodophen or nosophen, tannoform, thymol, aristol, zinc oxide, zinc stearate, acetanilid, phenacetine, benzoic acid, boric acid, salicylic acid, alumin. acetate, silver nitrate, argyrol, bismuth salts, borax, camphor, iodex, iodoform, europhen, emplast. hydrargyri.

(d) Ointments: Mercury, beta-naphthol, ol. rusci, tar, pyrogallol, resorcin, scarlet red, sulphur, zinc oxide, zinc stearate, benzoic acid, boric acid, carbolic acid, salicylic acid, ammoniated mercury, ichthyol, Credé, bals. of Peru, chrysarobin, diachylon, epicarin, citrine, hydrarg. ox. flav., iodex, iodine, iodoform.

Antiseptics. Meningeal.—Helmitol; salvarsan, etc.

Antiseptics. Pancreatic.—Helmitol.

Antiseptics. Salivary.—Helmitol; potass. chlorate.

Antiseptics. Urinary.—See Urinary Antiseptics.

Antisialics (Gr. *ἀντί* against + *σίαλον* saliva).—Atropine, belladonna, duboisine, potass. or sod. chlorate.

Antispasmodics, Biliary (Gr. *ἀντί* against + *σπασμός* spasm).—Atropine, morphine, nitroglycerine, sod. nitrite. (See also Cholelithiasis, in Part 1.)

Antispasmodics, Bronchial.—See Bronchial Antispasmodics.

Antispasmodics, Intestinal.—See Intestinal Antispasmodics.

Antispasmodics, Renal.—Atropine; morphine; sod. nitrite; nitroglycerine. (See also Nephrolithiasis, in Part 1.)

Antispasmodics, Uterine.—See Uterine Sedatives.

Antisyphilitics.—See Antiluetics.

Aperients (L. *ape'riens* opening).—See Purgatives.

Aphrodisiacs (Gr. *ἀφροδισία* venery).—Phosphorus, dilute hypophosphorous acid; yohimbine; asafœtida, cannabis indica; cimicifuga; oil of rue; oil of savin; tr. cantharidis; tr. capsici. (See also Impotence, in Part 3.)

Appetizers (L. *appe'tere* to desire).—See Stomachics.

Astringents, Intestinal (L. *ad* to + *strin'gere* to bind).—See Intestinal Astringents.

Astringents, Local.—Copper salts; zinc salts, *e.g.*—acetate, chloride, sulphate, oxide, stearate, peroxide, sulphocarbolate; lead, *e.g.*—lead acetate, lead water, Goulard's extract, lead and opium wash, ceratum plumbi subacetatis; alum, alumnol, liq. alum. acetatis; Burow's solution; iron sulphate, tr. ferric chloride, liq. ferri sesquichloridi, Monsel's solution, Loeffler's solution; silver nitrate, argyrol; gallic acid, tannic acid, glyceritum acidi tannici, ung. acidi tannici, ung. gallæ, ung. gallæ et opii; kino; krameria; catechu or gambir; precipitated chalk, prepared chalk, compound chalk powder; tr. of myrrh; potass. chlorate; resorcin; dilute hydrochloric acid; dilute and aromatic sulphuric acid; alcohol; borax; diachylon ointment; witch-hazel; formalin; bismuth salts.

Astringents, Urinary.—See Urinary Astringents.

Biliary Antiseptics.—Sod. salicylate; helmitol.

Biliary Antispasmodics.—Atropine, morphine, nitroglycerine, sod. nitrite. (See also Cholelithiasis, in Part 1.)

Bitters, Stomachic.—See Stomachic Bitters.

Blistering Agents.—See Vesicants.

Blood Alkalinizers or Antacids (Arabic *al-qalīy* potash).—Potassium acetate, citrate, bicarbonate and bitartrate; sodium carbonate and bicarbonate. (See also Acidosis, in Part 1.)

Blood Antiseptics.—Sod. sulphide; electrargol; collargol; ung. Credé; nuclein; mercury preparations; salvarsan; neosalvarsan; arsenous acid; sodium arsanilate; tartar emetic; quinine; optochin.

Bronchial Antispasmodics (Gr. *ἀντί* against + *σπασμός* spasm).—Atropine, belladonna, nitroglycerine, sod. nitrite, amyl nitrite, sod. or potass. iodide, hydriodic acid, ethyl iodide, ether, potass. nitrate (paper), stramonium, pyredin, tr. and comp. tr. of benzoin, adrenalin, grindelia, calcium salts, lobelia, syrup or fl. ext. of wild cherry, codeine, morphine. (See also Asthma, in Part 1.)

Broncho-Pulmonary Antiseptics.—Creosote, creosote carbonate, creosote valerate, oil of turpentine, terebene, terpene hydrate, thiocol, eucalyptus, myrtol, balsam of tolu, copaiba, cubebs, sandalwood.

Broncho-Pulmonary Deodorizers (L. *de* from + *o'dor* odor).—Turpentine, copaiba, cubebs, sandalwood, creosote.

Cardiac Sedatives (L. *sedo* I allay).—Aconite, veratrum, muscarine.

Cardiac Stimulants (L. *stim'ulus* goad).—Digitalis, digitalin, digitoxin, digipuratum; strophanthus, strophanthin; squills; adonis vernalis; apocynum; cimicifuga; convallaria; strychnine, nux vomica; atropine, belladonna; caffeine; camphor; spt. camphoræ; ether; spt. ætheris; spt. ætheris comp.; ethyl iodide; alcohol; spt. of peppermint; Addison's or Guy's pill; aqua ammoniæ, arom. spt. of ammonia; ammon. carbonate; adrenalin; pituitrin; morphine.

Carminatives (L. *car'men* charm).—Peppermint oil, spirit and water; spearmint oil, spirit and water; soda-mint; oil of aniseed, oil of clove; oil of pennyroyal; ol. origani; caraway; cardamom; cinnamon oil, water, tinct. and syrup; fennel oil and water; oil of cajaput; nutmeg; tr. of myrrh; oil of turpentine; ginger; sinapis; asafœtida; tr. capsici; comp. tr. lavandulæ; alcohol; ether, spt. ætheris, spt. ætheris comp.; chloroform, spt. chloroformi, chloroform water; arom. spt. ammoniæ; spt. camphoræ, camphor water.

Cathartics (Gr. *κάθαρσις* a cleansing).—See Purgatives.

Caustics (Gr. *καίειν* to burn).—Acetic acid; monochloracetic acid; trichloracetic acid; nitric acid; carbolic acid; lactic acid; chromic acid; arsenous acid; liq. hydrargyri nitratis; silver nitrate; iodine; Marsden's paste; ammoniated mercury; alumen ex-

siccatum; potass. carbonate; potass. hydroxide; liq. potassæ; sod. carbonate; sod. hydroxide; zinc chloride; zinc sulphate.

Cerebral Sedatives (L. *sedo* I allay).—See Nervous Sedatives.

Cerebral Stimulants (L. *stim'ulus* goad).—Caffeine; atropine; strychnine; camphor; asafœtida.

Cholagogues (Gr. χολή bile + ἀγειν to lead).—Fel bovis; sod. glycocholate; salicylic acid; sod. salicylate; ammon. chloride; dilute nitric acid; dilute nitrohydrochloric acid; euonymus; sod. benzoate; thymol; phenol; menthol; chloral; acids.

Circulatory Sedatives.—See Cardiac Sedatives.

Corrosives (L. *con* with + *ro'dere* to gnaw).—See Caustics.

Cough Sedatives (L. *sedo* I allay).—Morphine codeine, heroin, dionin, opium, brown mixture, chloral hydrate, chloroform, calcium salts, ol. pini pumilionis, ol. pini sylvestris.

Counter-Irritants.—See Cutaneous Irritants.

Cutaneous Irritants or Stimulants.—Mustard, turpentine, camphorated oil, camphor-chloral, emplastrum capsici, ung. capsici, tr. iodi, ung. iodi or iodovasogen, iodized phenol, menthol, cantharides, ol. rusci, oil of cade, oil of tar, oil of clove, oil of sassafras, ol. tiglii, Burgundy pitch, ung. picis liquidæ, pyrogallol ung., scarlet red, pyrethrum, potassa sulphurata, tr. of green soap, Lassar's peeling paste, lotio alba, alcohol, bay rum, spt. rosmarini, tr. and comp. tr. of benzoin, acetic acid, ammonia, liniment, ammoniæ, chloroform liniment, comp. chloroform liniment, soap liniment, turpentine liniment, acetic turpentine liniment, infus. picis liquidæ, liq. carbonis detergens, liq. calcis sulphuratæ, liq. picis alkalinus, liq. picis carbonis.

Cycloplegics.—See Mydriatics and Cycloplegics.

Cyclotonics.—See Myotics and Cyclotonics.

Demulcents.—Mucilage of acacia, tragacanth, cydonium and sassafras medullæ; dextrin; licorice; glycerine; flaxseed or linseed tea; linseed oil; ammon. chloride; potass. chlorate.

Deodorants.—Potass. permanganate; wood charcoal.

Deodorizers, Broncho-Pulmonary.—See Broncho-Pulmonary Deodorizers.

Depilatories (L. *de* from + *pi'lus* hair).—Barium sulphide; calcium sulphide; liq. calcis sulphuratæ; electrolysis; X-ray. (See also Hypertrichosis, in Part 5.)

Depressants (L. *de* down + *prem'ere* to press).—See Sedatives.

Detergents (L. *deterge're* to cleanse).—Castile soap; soft soap; tr. of green soap; soap liniment; borax; sod. carbonate.

Diaphoretics (Gr. δια through + φορειν to carry).—Pilocarpine, pilocarpus; physostigmin, physostigma; aconite; lobelia; morphine, opium; Dover's powder; ipecac; senega; apocynum; asafœtida; cimicifuga; colchicum; eucalyptus; copaiba; guaiacum; juniper; ammon. acetate, liq. ammon. acetatis, liq. ferri et ammonii acetatis; dilute acetic acid; benzoic acid; spt. ætheris nitrosi; potass. nitrate; sod. salicylate, salol, aspirin; tartar emetic; terpene hydrate; alcohol; camphor, spt. camphor; tr. capsici; elder flower; linden flower tea; koumiss; water.

Digestives (L. *dis* apart + *ger'ere* to carry).—Dilute hydrochloric acid, betain hydrochloride (liberates nascent HCl); fel bovis and sod. glycocholate (aid digestion of fats); spt. ætheris (aids digestion of fats); proteolytic enzymes (Gr. ἐν in + ζύμη leaven), *e.g.*—pepsin, peptogenic milk powder, trypsin, enzymol, papayotin, pancreatin; amylolytic enzymes, *e.g.*—diastase, taka-diastase, malt extract, cereo, pancreatin; combined proteolytic, amylolytic and lipolytic, *e.g.*—pancreatin, pancreon, and liq. pancreatini.

Digestive Stimulants.—See Stomachics.

Discutients (L. *discu'tere* to dissipate).—Iodides.

Disinfectants (L. *dis-* apart + *infi'cere* to corrupt).—See Antiseptics.

Diuretics (Gr. δια through + οὐρειν to urinate).—Potassium salts, *e.g.*—acetate, citrate, nitrate, bicarbonate, bitartrate; sod. nitrite; liq. potassii citratis; lith. citrate, and effervescent lith. citrate; ammon. acetate, liq. ammon. acetatis, liq. ferri et ammon. acetatis; dilute acetic acid; spt. ætheris nitrosi; benzoic acid and benzoates; alcohol; iodides; linseed oil; lobelia; copaiba; cubebs; sandalwood; oil of tansy; oil of turpentine; sparteine, squills; senega; strophanthus; digitalis; Addison's or Guy's pill; calomel; adonis vernalis; apocynum; asafœtida; cimicifuga; colchicum; atophan; urethane; convallaria; euonymus; grindelia; guaiacum; terpene hydrate; jalap; diuretin; theobromine; theophyllin or theocin; agurin; caffeine; urea, urol; pareira; saw palmetto; scoparium; triticum; buchu; uva ursi; zea; juniper; flaxseed tea; tr. cantharidis; tr. capsici; pituitary extract; koumiss; milk; water.

Emetics (Gr. ἐμετικός).—Mustard; sod. chloride; alum; zinc sulphate; copper sulphate; ipecac; emetin hydrochloride; apomorphine; euporphine; colchicum; tartar emetic.

Emmenagogues (Gr. ἐμμηνα menses + ἀγειν to lead).—Aloes, aloin, and other purgatives; tr. of myrrh; pilula aloes et myrrhæ; pilula aloes et ferri; apiol; asafœtida; cotton-root bark; oil of pennyroyal; oil of rue; oil of savin; oil of tansy; oxalic acid; potass. permanganate; manganese dioxide. (See also Amenorrhœa, in Part 2.)

Emollients (L. *e* out + *mol'lis* soft).—Petrolatum; liquid petrolatum; benzoinated lard; suet; lanolin; linseed oil; olive-oil; cottonseed oil; oil of sweet almond; oil of sesame; cacao butter; oleic acid; glycerine; glyceritum amyli; cold cream; ceratum resinæ; ceratum simplex; ung. boric acid; ung. carbolic acid; ung. zinc oxide; ung. zinc stearate; mucilage of cydonium; carron oil.

Enzymes.—See Digestives.

Escharotics (Gr. ἐσχάρα scab).—See Caustics.

Expectorants (L. *ex* out + *pec'tus* breast).—Ammon. chloride; ammon. carbonate; liq. ammon. acetatis; arom. spt. ammoniæ; ammon. iodide; calcium iodide; sod. or potass. or strontium iodide; syrup of hydriodic acid; creosote; creosote carbonate; creosote valerate; guaiacum; guaiacol; guaiacol carbonate; tolu balsam; tolu syrup; terebene; terebene hydrate; copaiba; cubebs; oil of tar; syrup of tar; senega; squills; sanguinaria; apocynum; asafœtida; garlic; cimicifuga; lobelia; galbanum; licorice; yerba santa; ol. anisi; flaxseed or linseed oil; flaxseed tea; ipecac; tartar emetic; Brown mixture; physostigma; apomorphine; euporphin; tr. of benzoin; camphor; spt. of camphor; Dover's powder; Pot. citrate.

Ferments, Digestive.—See Digestives.

Flavoring Agents.—Peppermint oil, water and essence; spearmint oil, water and essence; oil of wintergreen; oil and water of bitter almond; oil and water of aniseed; oil of bergamot; oil of sassafras; mucilago sassafras medullæ; lemon oil, syrup and tinct.; orange syrup, comp. spt., tinct. of sweet orange peel, tr. of bitter orange peel; syrup of citric acid; lavender oil, spt., and comp. tinct.; syrup of wild cherry; syrup of raspberry; syrup of tolu; cinnamon oil, tinct., and syrup; licorice; sarsaparilla; ginger; caraway seed; simple syrup; aromatic or simple elixir; coumarin; glycerine; cane sugar; milk sugar; saccharin; saxin; dulcin or sucrol.

Galactogogues (Gr. γάλα milk + ἀγωγός leading).—Pituitary extract. (See also under Infant Feeding, in Part 1.)

Galactophyga (Gr. *γάλα* milk + *φυγή* flight).—Atropine, belladonna. (See also under Management of the Puerperium, in Part 4.)

Gastric Antifermentatives.—See Antifermentatives.

Gastric Antiseptics.—See Antifermentatives.

Gastric Sedatives (L. *se'do* I allay).—Menthol; menthol valerate or validol; cocaine; chloretone; chloral hydrate; chloroform; codeine; morphine; opium; dilute hydrocyanic acid; aqua laurocerasi; lime-water; tr. iodi; cerium oxalate; ingluvin; carbolic acid; silver nitrate; bismuth salts; calomel in small doses; condurango. (See also under Vomiting, in Part 1.)

Gastric Stimulants.—See Stomachics.

Hæmatics (Gr. *αἷμα* blood).—Iron preparations, including ovoferrin, hæmol, hæmogallol, Basham's mixture, Blaud's pill, iron and aloes pill, elix. ferri, quin. et strych. phosphat., etc.; arsenic preparations, including Fowler's sol., sod. cacodylate, sod. arsanilate, etc.

Hæmostatics (Gr. *αἷμα* blood + *στατικός* standstill).—Epinephrin; calcium chloride, calc. lactate; normal horse serum; stagnin; coagulen; mammary gland; hydrastis, hydrastinin; ergot; cotarnin (styptol and stypticin); gelatin; cinnamon; witch-hazel; oil of turpentine; fl. ext. senecionis; gallic acid; tannic acid; alum; lead acetate; acetic acid; sulphuric acid; pituitrin. (See also Hemorrhage, Hemoptysis, and Hematemesis, in Part 1.)

Hypnotics (Gr. *ὑπνωτικός*).—Opium; morphine; Dover's powder; codeine; chloral hydrate; butyl chloral hydrate; chloralamide; chloretone; urethane; amylene hydrate; paraldehyde; trional; tetronal; veronal; medinal (veronal sodium); sulphonal; hedonal; hypnal; isopral; bromural; bromides; bromoform; monobromated camphor; hyoscyamus; hyoscin; hyoscyamine hydrobromide; pyramidon; phenacetine; triphenin; lactophenin; cannabis indica; cannabin; hops; alcohol; koumiss.

Intestinal Antiseptics.—Menthol; camphoric acid; benzoic acid and benzoates; benzosalin; eucalyptus; creosote; guaiacol, guaiacol carbonate; ichthalbin; beta-naphthol; hydronaphthol; naphthalene tetrachloride; tannopin; potass. or calc. permanganate; salol; salophen; oil of turpentine; calomel; bismuth salts; liq. antisepticus; manganese dioxide; fel bovis; lactic acid; lactobacilline or lactone; bacillus Bulgaricus; hydrogen peroxide; bolus alba.

Intestinal Antispasmodics.—Atropine; belladonna; morphine; opium; codeine; nitroglycerine; sod. nitrate.

Intestinal Astringents and Sedatives.—Opium; morphine; codeine; tannic acid, tannalbin, tannigen, tannocol, tannoform, tannopin; catechu or gambir; kino; krameria; coto-bark; precipitated chalk, prepared chalk, compound chalk powder, lime-water; bismuth salts; silver nitrate; lead acetate; potass. permanganate.

Intestinal Stimulants.—Strychnine; atropine; pituitary extract. (See also Purgatives.)

Keratolytics (Gr. *κέρας* horn + *λύσις* a loosening).—Salicylic acid; sulphur; resorcin; lactic acid; liq. potassæ; green soap; Lassar's peeling paste.

Laxatives (L. *laxati'vus* relaxing).—See Purgatives.

Lubricants.—Petrolatum molle; petrolatum liquidum; cottonseed oil; glycerine; boroglyceride; cacao butter; synol soap; lubraseptic; lubricondrin.

Meningeal Antiseptics.—Helmitol; salvarsan, etc.

Mydriatics and Cycloplegics (Gr. *μυδρίασις* dilatation of the pupil; *κύκλος* circle + *πληγή* stroke).—Atropine, homatropine, euphthalmine, eumydrin, duboisine, hyoscin, hyoscyamine, hydrobromide, cocaine, adrenalin. Euphthalmine and cocaine are not cycloplegics.

Myotics and Cyclotonics (Gr. *μείωσις* pupillary contraction; *νύκλος* circle + *τόνος* tone).—Physostigmin; pilocarpine; muscarine.

Narcotics (Gr. *νάρκη* stupor).—See Hypnotics.

Nervous Sedatives.—Opium, laudanum, paregoric, Dover's powder, morphine, codeine, dionin heroin, Schlesinger's analgesic solution; alumnol; hyoscyamus, hyoscyamin, hyoscin or scopolamine, hyoscyamine hydrobromide; duboisine; alcohol; ether; spt. ætheris, spt. æth. comp.; chloroform, spt. chloroform; ethyl chloride; nitrous oxide; cannabis indica; gelsemium; conium; sumbul; veratrum; lobelia; valerian, valerates; asafœtida; garlic; aconite; bromides, bromural, bromoform, hydrobromic acid, monobromated camphor; chloral hydrate, butyl chloral hydrate; chloral formamide; chloretone; urethane; paraldehyde; amylene hydrate; trional; tetronal; sulphonal; veronal; medinal; hedonal; hypnal; isopral; pyramidon; phenacetin; triphenin; lactophenin; acetanilid; exalgin; antipyrin; salipyrin; salophen; phenocoll; aspirin; calcium salts. (See also Anæsthetics, General; Anæsthetics, Local; Analgesics, General; Analgesics, Local; Antipruritics; Antispasmodics; Hypnotics.)

Nervous Stimulants.—Strychnine; atropine; caffeine; camphor; asafœtida.

Nutrients.—Meat juice, meat extracts, bovinine or bovril, Leube's beef solution, beef or dry peptonoids, liquid peptonoids, panopepton, tropon, sanose, somatose, iron somatose, nutrose or sod. caseinate, gelatin, matzoön or zoölak, koumiss, kephir, junket, malt extract, dextri-maltose, honey, levulose, cereal waters and gruels, cod-liver oil, olive oil, cottonseed oil, sweet almond oil, goose oil.

Oxytocics (Gr. *ὀξύς* swift + *τόκος* birth).—See Uterine Stimulants.

Pancreatic Antiseptics.—Helmitol.

Parasiticides (L. *parasi'tus* parasite + *cæde're* to kill).—Mercury; chrysarobin; resorcin; thymol; salicylic acid; beta-naphthol; benzoin; camphor; tar; balsam of Peru; ichthyol; sulphur; sulphurated potash; iodine; pyrethrum; acetic acid; trypanroth; tr. cocculeus Indicus; sod. hyposulphite. (See also Antiseptics, Local.)

Protectives.—(a) Powders: Zinc carbonate, calamine, zinc oxide, zinc stearate, boric acid, starch, talcum, bismuth salts, aristol, lycopodium.

(b) Solutions: Calamine lotion, calamine liniment, tr. and comp. tr. benzoin.

(c) Oils and Ointments.—See Emollients.

(d) Others: Traumaticin, collodium, collodium flexile, bals. of Peru.

Purgatives (L. *purga're* to cleanse).—(a) Vegetable Purgatives: Manna, syrup of manna; rhubarb; senna; podophyllum; elaterium, elaterin; aloes, aloin; cascara sagrada; jalap; castor-oil; croton oil; sweet-almond oil; olive-oil; cottonseed oil; linseed oil; pareira; scammony; scoparium; agar-agar; apocynum; asafœtida; yeast; ceredin or cerolin (yeast fats); chirata; colchicum, colchicin; colocynth; euonymus; guaiacum.

(b) Saline Purgatives: Magnesium sulphate; mag. oxide; mag. carbonate; milk of magnesia; liq. magnesii citratis; liq. mag. sulphatis effervescent; mist. ferri acida; Rochelle salt; Seidlitz powder; sod. phosphate; sod. sulphate; sod. chloride; effervescent sod. phosphate; Vichy salt; Carlsbad salts; cream of tartar; sod. hyposulphite; liq. potassii citratis.

(c) Mercurial Purgatives: Calomel; gray powder; blue mass.

(d) Miscellaneous: Fel bovis; liquid petrolatum or mineral oil; phenolphthalein; agar-agar; regulin; sulphur; glycerine; yeast; ceredin or cerolin (yeast

fats); mist. rhei et sodæ; comp. laxative pill; lapactic pill; comp. rhubarb pill; Addison's or Guy's pill; Chelsea pensioner; comp. licorice powder.

Refrigerants (L. *fri'gor* cold).—Local refrigerants are menthol, menthol ointment, methyl chloride, lead water, Goulard's extract, dilute acetic acid or vinegar, alcohol. Systemic refrigerants are enumerated under Antipyretics.

Renal Antispasmodics.—Atropine; morphine; nitroglycerine; sod. nitrite.

Respiratory Sedatives.—Opium, morphine, codeine, dionin, heroin, chloroform, chloral, camphoric acid.

Respiratory Stimulants.—Strychnine, atropine, caffeine, camphor, ether, ammonia, aqua ammoniæ, arom. spt. ammoniæ, adonis vernalis, lobelia, morphine, etc.

Rubefacients (L. *ru'ber* red + *fa'cere* to make).—See Cutaneous Irritants.

Salivary Antiseptics.—Helmitol, potass. chlorate.

Sedatives, Bronchial.—See Bronchial Antispasmodics.

Sedatives, Cardiac.—See Cardiac Sedatives.

Sedatives, Circulatory.—See Cardiac Sedatives.

Sedatives, Cough.—See Cough Sedatives.

Sedatives, Gastric.—See Gastric Sedatives.

Sedatives, Intestinal.—See Intestinal Astringents.

Sedatives, Nervous.—See Nervous Sedatives.

Sedatives, Respiratory.—See Respiratory Sedatives.

Sedatives, Urinary.—See Urinary Sedatives.

Sedatives, Uterine.—See Uterine Sedatives.

Sialagogues (Gr. σίαλον spittle + γεννάω to produce).—Pilocarpine; physostigma, physostigmin; adrenalin; pyrethrum.

Skin Irritants.—See Cutaneous Irritants.

Somnolents (L. *som'nus* sleep).—See Hypnotics.

Spinal Stimulants.—Strychnine, caffeine.

Stimulants, Cardiac.—See Cardiac Stimulants.

Stimulants, Cerebral.—See Cerebral Stimulants.

Stimulants, Cutaneous.—See Cutaneous Irritants.

Stimulants, Gastric.—See Stomachics.

Stimulants, General.—See Cardiac Stimulants.

Stimulants, Nervous.—See Nervous Stimulants.

Stimulants, Respiratory.—See Respiratory Stimulants.

Stimulants, Spinal.—See Spinal Stimulants.

Stimulants, Uterine.—See Uterine Stimulants.

Stomachics.—Basic orexin, tannic orexin; nux vomica, strychnine; alcohol; quinine, cinchona; gentian; quassia; calumba; cardamom; chirata; capsicum; cimicifuga; pareira; condurango; lupulin, hops; hydrastis; cotarnin (styptol and stypticin); ipecac; nutmeg; myrtol; rhubarb; dilute phosphoric acid; acidum arsenosum; Fowler's solution; meat extracts.

Styptics (Gr. στυπτικός astringent).—Adrenalin; cocaine; antipyrin; hydrogen peroxide; alum; Squibb's surgical powder; ferric chloride; Monsel's solution; coagulen; kephalin; stagnin; cotarnin; acetic acid; trichloracetic acid; styptic collodion; witch-hazel; normal horse serum. (See also Astringents; and Hemorrhage in Part 1.)

Sudorifics (L. *su'dor* sweat + *fer're* to bear).—See Diaphoretics.

Tonics (Gr. τόνος tone).—See Alteratives and Stimulants.

Urate Solvents.—See Antilithics.

Uric Acid Excretion, Stimulators.—See Antilithics.

Urinary Acidifiers.—Mineral acids, *e.g.*—dilute acetic acid, dilute and aromatic sulphuric acid; boric acid; benzoic acid and its salts; benzosalin; sod. biphosphate.

Urinary Antacids.—Potassium salts; sod. carb. and bicarb.

Urinary Antiseptics.—Urotropin; helmitol; methylene blue; myrtol; guaiacol; eucalyptus; betanaphthol; copaiba; cubebs; sandalwood; salol; salophen; saliformin; benzosalin; salicylic acid; aspirin; sod. salicylate; benzoic acid and benzoates; boric acid; sod. borate; uva ursi.

Urinary Astringents.—Copaiba; cubebs; sandalwood; rhois aromatica.

Urinary Sedatives.—Nutmeg; copaiba; cubebs; triticum; zea; uva ursi.

Uterine Hæmostatics.—Ergot; pituitrin; hydrastis; cotarnin (stypticin and styptol); mammary gland; oil of cinnamon.

Uterine Sedatives.—Veratrum; pulsatilla; viburnum; cotarnin (stypticin and styptol); mist. helonin comp.; elix. guaranæ et celerinæ.

Uterine Stimulants.—Pituitary extract; ergot; hydrastis; hydrastinin; quinine; cimicifuga; adrenalin.

Vasoconstrictors (L. *vas* vessel + *con* together + *strin'gere* to draw).—Epinephrin or adrenalin; cocaine; pituitary extract; atropine; strychnine; digitalis; squills; adonis vernalis; convalaria; cimicifuga; hydrastis; hydrastinin; camphor; ergot; ether.

Vasodilators.—Nitroglycerine; amyl nitrite; sod. nitrite; mannitol hexanitrate; erythrol tetranitrate; vasotonin; alcohol.

Vehicles.—Waters of peppermint, spearmint, camphor, chloroform, cinnamon, allspice, and rose; syrups of wild cherry, tolu, citric acid, and cinnamon; simple syrup; comp. syrup of sarsaparilla; aromatic or simple elixir; essence of pepsin; honey; milk sugar; saccharum; starch; glyceritum amyli; liquid petrolatum; soap liniment.

Vesicants (L. *vesi'ca* blister).—Mustard; mustard oil; cantharides; iodine.

WEIGHTS AND MEASURES

Metric Measures of Weight

(A gramme is the weight of 1 milliliter (c.c.) of distilled water at 4° C.)

1 milligram	(mg.)	=	.001 gram.
1 centigram	(cg.)	=	.01 "
1 decigram	(dg.)	=	.1 "
1 Decagram	(Dg.)	=	10. grams.
1 Hectogram	(Hg.)	=	100. "
1 Kilogram	(Kg.)	=	1000. "
1 Myriagram	(Mg.)	=	10000. "

Metric Fluid Measure

1 milliliter	(ml. or mil. or c.c.)	=	.001 liter.
1 centiliter	(cl.)	=	.01 "
1 deciliter	(dl.)	=	.1 "
1 Decaliter	(Dl.)	=	10. liters.
1 Hectoliter	(Hl.)	=	100. "
1 Kiloliter	(Kl.)	=	1000. "
1 Myrialiter	(Ml.)	=	10000. "

Apothecaries' Weight

20 grains	= 1 scruple (℈)
3 scruples	= 1 drachm (ʒ)
8 drachms	= 1 ounce (℥)
12 ounces	= 1 pound (lb)

Apothecaries' Fluid Measure

60 minims	= 1 fluidrachm (fl ʒ)
8 fluidrachms	= 1 fluidounce (fl ℥)
16 fluidounces	= 1 pint (O)

1 minim	= from 1 to 2 drops.
1 fluidrachm	= nearly 1 teaspoonful; fl ʒi = nearly 4 c.c.; teasp. = about 5 c.c.
2 teaspoonfuls	= 1 dessertspoonful.
4 teaspoonfuls	= 1 tablespoonful.
1 wineglass	= about 2 fluidounces.
1 teacup	= about 4 fluidounces.
1 tumbler	= about 8 fluidounces.
6 full teaspoonfuls	= about 1 fluidounce.
2 tablespoonfuls	= about 1 fluidounce.
1 litre (1,000 c.c.)	= a little over 2 pints, or 1 quart.

Fahrenheit and Centigrade Relations

To convert Fahrenheit degrees into those of Centigrade, subtract 32 and divide by 1.8.

To convert Centigrade degrees into those of Fahrenheit, multiply by 1.8 and add 32.

Equivalents of Apothecaries' Fluid Measure in Metric

Minims	1 = 0.06161	mils.	or	c.c.
"	2 = 0.123	"	"	"
"	3 = 0.185	"	"	"
"	4 = 0.246	"	"	"
"	5 = 0.308	"	"	"
"	6 = 0.370	"	"	"
"	7 = 0.431	"	"	"
"	8 = 0.493	"	"	"
"	9 = 0.555	"	"	"
"	10 = 0.616	"	"	"
"	11 = 0.678	"	"	"
"	12 = 0.739	"	"	"
"	13 = 0.801	"	"	"
"	14 = 0.863	"	"	"
"	15 = 0.924	"	"	"
"	20 = 1.232	"	"	"
"	25 = 1.540	"	"	"
"	30 = 1.848	"	"	"

Fluid-drachms	1 = 3.697	mils.	or	c.c.
" "	2 = 7.393	"	"	"
" "	3 = 11.090	"	"	"
" "	4 = 14.787	"	"	"
" "	5 = 18.483	"	"	"
" "	6 = 22.180	"	"	"
" "	7 = 25.877	"	"	"

Fluid-ounces	1 = 29.573	"	"	"
" "	2 = 59.147	"	"	"
" "	3 = 88.721	"	"	"
" "	4 = 118.295	"	"	"
" "	5 = 147.869	"	"	"
" "	6 = 177.442	"	"	"
" "	7 = 207.016	"	"	"
" "	8 = 236.590	"	"	"
" "	10 = 295.737	"	"	"
" "	12 = 354.884	"	"	"
" "	14 = 414.032	"	"	"
" "	16 (Oi) = 473.179	mils.	or	c.c.
" "	32 = 946.35	mils.	or	c.c.

Equivalents of Apothecaries' Weight in Metric

(To convert grains into grams multiply by 0.0648; to convert grams into grains, multiply by 15.432.)

Grain	1/1000 = 0.000065	gram.
"	1/500 = 0.000129	"
"	1/400 = 0.00016	"
"	1/300 = 0.00022	"
"	1/240 = 0.00027	"
"	1/200 = 0.00032	"
"	1/180 = 0.00036	"
"	1/160 = 0.00040	"
"	1/150 = 0.00043	"
"	1/120 = 0.00054	"
"	1/100 = 0.00065	"
"	1/80 = 0.00081	"
"	1/64 = 0.00101	"
"	1/60 = 0.00108	"
"	1/50 = 0.00129	"
"	1/48 = 0.00135	"
"	1/40 = 0.0016	"
"	1/36 = 0.0018	"
"	1/32 = 0.0020	"
"	1/30 = 0.0022	"
"	1/25 = 0.0026	"
"	1/24 = 0.0027	"
"	1/20 = 0.0032	"
"	1/18 = 0.0036	"
"	1/16 = 0.0040	"
"	1/15 = 0.0042	"
"	1/12 = 0.0054	"
"	1/10 = 0.0065	"
"	1/8 = 0.008	"
"	1/6 = 0.011	"
"	1/4 = 0.016	"
"	1/3 = 0.022	"
"	1/2 = 0.032	"
"	2/3 = 0.043	"
"	3/4 = 0.049	"
"	1 = 0.065	"
"	2 = 0.130	"
"	3 = 0.194	"
"	4 = 0.259	"
"	5 = 0.324	"
"	6 = 0.389	"
"	7 = 0.454	"
"	8 = 0.518	"
"	9 = 0.583	"

Equivalents of Apothecaries' Weight in Metric

(Continued)

Grains	10 = 0.648	gram.
"	12 = 0.778	"
"	15 = 0.972	"
"	18 = 1.166	"
"	20 = 1.296	"
"	25 = 1.620	"
"	30 = 1.944	"
"	35 = 2.268	"
"	40 = 2.592	"
"	45 = 2.916	"
"	50 = 3.240	"
"	60 (℥i) = 3.888	"
Drachms	2 = 7.776	"
"	3 = 11.664	"
"	4 = 15.552	"
"	5 = 19.440	"
"	6 = 23.328	"
"	7 = 27.216	"
"	8(℥i) = 31.103	"

How to Calculate Percentages

There are 480 grains in one ounce, therefore a 100 per cent. mixture or solution of any medicament contains 480 grains to the ounce; a 10 per cent. mixture, 48 grains to the ounce; a 5 per cent. mixture, half this amount, or 24 grains to the ounce; a 1 per cent. mixture, 4.8 grains to the ounce; a 3 per cent. mixture, 3 times 4.8, or 14.4 grains to the ounce, and so on.

Calculation of Dosage

To calculate the dose for a child from that of the adult, divide the age of the child by the age plus twelve. The resulting fraction multiplied by the adult dose gives, approximately, the required dose. When dealing with powerful narcotics, however, divide the result by two; with mild cathartics, multiply by two or three. Arsenic, mercury, atropine, and ipecac are also given in larger doses than indicated by the above rule.

Another rule of dosage by age is the following:

At 20 years, the adult dose.

At 10 years, one-half the age, one-half the dose.

At 5 years, one-fourth the age, one-fourth the dose.

At 2½ years, one-eighth the age, one-eighth the dose.

At 1 year, one-twelfth the dose.

The weight of the patient is, however, the most important criterion in the estimation of dosage.

The hypodermic dose is, ordinarily, two-thirds or three-fourths that by mouth; the rectal dose, five-fourths that by mouth, except with strychnine, the rectal dose of which should be, perhaps, half that by mouth.

Pharmaceutical Equipment

Scales and weights; fluid measures, including minim, drachm, ounce, and pint graduates; bottles or vials, 1 drachm, half-ounce, one, two, three, four, six and eight ounces, and one pint, with corks; tile or slab with scale; bone or horn spatula for mixing ointments; metal spatulas, narrow and broad; mortar and pestle; glass funnels and stand; filter paper; waxed papers and plain white papers for dispensing powders; powder boxes; pill boxes; ointment boxes; labels; prescription blanks; prescription file; gelatin capsules, sizes 0 to 10; capsule filler; large, shallow, unpolished, wedgewood mortar with pestle; pill machine.

Pharmaceutical Technique

Capsules may be filled with a capsule-filler, or by means of a paper funnel and the end of a penholder used as a packer.

In making pills, first place the dry ingredients in a large, shallow, unpolished wedgewood mortar, and pulverize them; then add the other ingredients and the excipient (usually a paste made of powdered tragacanth, 1 part, glycerin, 3½ parts, and water, 1 part), and mix thoroughly with the pestle. Then place the resulting pill-mass upon a tile or slab dusted with lycopodium or fine starch powder, and roll into a cylinder of a length corresponding with the number of divisions on the tile-scale, which represent the number of pills to be made. Then cut the cylinder into the requisite number of pieces, and roll into pills with thumb and fingers. Then place in a pill-box or bottle, and surround with lycopodium, talc, althæa, rice flour, or powdered chalk. A pill machine may be used.

In making an emulsion, place the oil or resin to be emulsified in a mortar and add the emulsifier (mucilage of acacia or of tragacanth, freshly prepared, or yolk of egg [vitellus]). Mix well with a pestle, then add water slowly, stirring constantly; then add any other ingredient. Do not add much alcohol, as it precipitates the emulsifying agent.

To make rectal or vaginal suppositories, mix the medicament on a tile, dusted with lycopodium powder, with finely shaved cacao-butter (about 15 grains for the adult rectum; about 1 drachm for the vagina), by means of a spatula. Then cut and roll into the required cylindrical forms. Dispense in a powder-box between layers of cotton.

To make urethral or uterine bougies or pencils, melt together white gelatin, 3 parts, glycerin, 1 part, and distilled water, 1 part, by weight; then add the medicament, and suck into an oiled glass-tube, about the diameter of a No. 9 catheter. When cold, push the bougie out, and cut it into the required number of lengths.

The Harrison Anti-narcotic Law

Every practicing physician should register with the collector of internal revenue of the district. In writing a prescription for narcotic or habit-forming drugs, there must be written thereon the name and address of the patient, the physician's name in full, and his registry number and office address. These prescriptions cannot be refilled. If the physician dispenses, he must keep a record of all habit-forming drugs dispensed, the number of persons dispensed to, and the date. Treatments administered by himself, or under his direction when away from his office, need not be recorded. To obtain drugs which he desires for his own use, he must make out an order on a blank form bearing his registry number. These blanks are furnished by the Internal Revenue Department in packages of ten for ten cents. A prescription blank cannot be used.